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Fearless predictions! What '98 holds in store (pages 2 and 8) and what you should hold out for (page 109).

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Web dreams skid into reality

▸ *Deals with AOL, popular engines key to success*

By Sharon Machlis

THE WORLD WIDE WEB used to be the great equalizer, a place where anyone, big or small, could put up a site and compete on a level playing field for consumer attention and dollars.

No more.

"In the last 12 months, the whole myth of 'anybody can get up online and sell' has been debunked," said Nicole Vanderbilt, director of the digital commerce group at Jupiter Communications, Inc. in New York. "It requires very deep pockets."

STEVE BOWNS

Photo Store's William Howe found banner ads disappointing

And it isn't just the cost of producing compelling content that is at issue. It is the cost of advertising on or partnering with the Internet's heaviest traffic generators, notably America Online, Inc. and major search engines, which wield increasing clout as smaller sites vie to stand out amid the clutter in cyberspace.

"You've got to go where the buyers are," said Phil Polishook, vice president of marketing at EToys, Inc. in Santa Monica,

The Web, page 108

IT predicts key '98 events

By Computerworld *staff*

What will be the big news in 1998? We posed that question to some information systems managers and industry soothsayers, and here's a sampling of what they came up with

JOHN RAY

"Big news next year? The breakup of Microsoft like AT&T. Or, Microsoft pays off the national debt as an out-of-court settlement."

– MIKE TARDIF, VICE PRESIDENT OF GLOBAL TECHNICAL OPERATIONS AT GOLDMAN, SACHS & CO. IN NEW YORK

"The headline will be, 'Apple Computer merges with __.' I don't know if this will be a good thing or a bad thing, but it will certainly be a thing."

– SCOTT ADAMS, CREATOR OF THE "DILBERT" COMIC STRIP

JAMES D. DILLON

IT predicts, page 16

Databases lose star status to packaged apps

By Craig Stedman

PACKAGED APPLICATIONS are starting to knock databases out of their position at the center of the corporate server universe.

As more users buy packaged software instead of writing their own programs, strategic priorities are shifting to the applications that run the business. That makes the database a secondary and more interchangeable choice for new buyers, according to analysts and a half-dozen information systems managers.

The application "is really the core of the IS focus today," said Keith Bearden, information services manager at A-dec, Inc., a dental equipment maker in Newberg, Ore.

Databases, page 108

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Forecast

IS takes center stage

INSIDE FORECAST

IT CAREERS: JOBS FORECAST '98

UP FRONT

The road ahead

In 1997, the Internet went corporate, handheld computers became a reality, speech recognition got practical and SAP became a phenomenon. But I don't expect 1998 to be as eventful.

Instead, it will be a year of transitions. Fanciful projections about the Internet's business potential will yield to grimmer bottom-line realities. The PC industry is waiting for the Merced chip, which won't be out until 1999, and a lot of work will stop dead in its tracks while companies fix their year 2000 problems.

The beginning of the year is a time to make predictions, so here are 10 of mine:

The Internet takes a breather. After two years of frantic investment and innovation, it's time to figure out how to make money with this stuff. There will be fewer glitzy new technologies and lots more concern about payback. Expect a ton of consolidation in this market in 1998. It's boring, but it's a stage the industry has to go through.

Digital, Apple, Novell don't make the cut. A prolonged downturn in tech stocks makes them acquisition bait. At least two of these companies won't be independent by the end of 1998.

Yahoo, AOL, Amazon win big. They sell community, which is where it's at online. Buy stock.

Network computers get hot. You want justification for network computers? Just go through the pain of an enterprisewide desktop software upgrade. Network computers won't replace a lot of PCs, but the concept of an intelligent terminal is proven and has staying power.

Microsoft hits the wall. Not with a crash, but with a stinging blow. Windows NT 5.0 won't ship in 1998; Windows 98 looks like no great shakes; the government is mounting a full frontal assault against the company; and Microsoft is out of the mainstream on thin clients. It's hard to see what there is to crow about, other than that enormous market share.

1998 will be a year of transitions.

Reality bites Java. Developers love it, but Java is slow. And the cross-platform story is being diluted by browser compatibility questions. Sun has to hold the Java coalition together, but the partners have many conflicting priorities. The key is server-side performance. Early customer stories will tell if Java applets can get beyond the novelty stage. Expect to see a lot of stories in 1998 about what Java *can't* do.

The year of Dell. The PC business is a replacement market, and that tends to favor vendors that can ship exactly what buyers want at low cost. Dell's star will continue to rise, while Compaq is in for some trouble.

The year of ERP. It's enterprise resource planning (ERP) software, not Java, that will become the next-generation corporate operating system. The SAP or Oracle financials platform is driving technology buys more than the desktop. Year 2000 conversions and early adopter successes will accelerate the momentum. SAP will get acquisitive.

Bandwidth disappointments. Does anyone really think the turgid cable and telephone company monopolies can move fast enough to bring bandwidth to consumers in any volume in 1998? Dream on.

The skills crunch eases. Nature abhors a vacuum, so expect market forces to come to bear on the shortage of IS professionals. Between crash retraining programs, college recruiting and the shakeout in Internet start-ups, this situation will begin to improve.

That's the top 10 from here. For more predictions, see our roundup on page 8 and our annual Forecast feature on pages 21-43. And if you have predictions of your own, E-mail me at the address below.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

IS casts wary eye on digital greeting cards

By Barb Cole-Gomolski

RICK WHITE recently got a digital greeting card via E-mail while at work, but the cheery message was lost on him.

"It was about 300K [bytes], and it took awhile to download," said White, an MIS manager at Pennaco Hosiery, Inc. in Granada, Miss.

With the holiday season in full swing, several information systems managers said they are seeing more and more of these electronic salutations. And having learned their lesson from snowballing electronic mail, they are making note of the potential for problems as workers get creative with E-mail and begin to send one another homeroade holiday greeting cards.

Digital greeting cards — often sent as attachments to E-mail — usually can be customized by the sender. They are widely available on the Internet for free and can easily be sent to individuals or groups. Some can be "sent" by pointing a recipient to a uniform resource locator, which puts less of a strain on E-mail resources.

For example, Greet Street, Inc. will sell you compressed cards that take up a mere 25K bytes; something like that could be a less-costly and faster alternative to addressing and mailing out company cards.

But left unchecked, employees may take it upon themselves to send uncompressed, bandwidth-sucking items such as photos.

CREATIVE E-MAIL

Although the phenomenon is relatively new, Tony Levitan, cofounder of Greet Street, predicted that more and more companies will be using dynamic E-mail — messages that contain graphics, animation, audio and video — during the next few years.

Eric Brown, an analyst at Forrester Research, Inc., in Cambridge, Mass., agreed. "Currently, less than 1% of E-mail carries graphic attachments, but that number is expected to rise to 25% by 2001," he said.

So far, IS concerns center on the network bandwidth that the electronic greetings might consume, as well as lost worker productivity.

CARD STORE OF THE FUTURE?

A sampling of companies that offer electronic greeting cards on the Web:

Company	What it offers
Greet Street *www.greetst.com*	Customizable digital postcards that are sent as E-mail attachments
Hallmark *www.hallmark.com*	More than 1,000 free digital cards
Digital Card *www.digitalcards.com*	Free cards for all occasions

"If you had a bunch of these [digital cards] flowing through the network, it could get bogged down," White said.

Most IS managers said electronic greeting cards aren't widespread in their companies, but that could change as more and more workers get access to the Internet.

"Currently, less than 1% of E-mail carries graphic attachments, but that number is expected to rise to 25% by 2001."
– Eric Brown, Forrester Research

"Only about 30 people in our company have Internet access," said Mike Mahan, MIS manager at Hottinger Baldwin Measurements, Inc. in Marlboro, Mass.

Baldwin, who received a digital greeting card from a friend last week, said the card was cute and harmless, but he pointed out that "E-mail seemed harmless when it first started, too."

"We've seen a few of these [digital greeting cards] recently, but it hasn't provided any noticeable uptick in our network traffic," said David Frost, IS capability leader at Owens Corning in Toledo, Ohio. "As long as the files aren't huge, I'm not going to worry about it."

PRODUCTIVITY SUFFERS

Frost, who said digital greetings are more likely to erode productivity than they are to suck up network bandwidth, also noted that "from now until the end of the year, productivity is going to stink anyway."

Brown pointed out that most companies have policies that advise workers to use the E-mail system for business only. "But that probably won't keep people from sending digital greeting cards to each other," said the analysts, who has himself fielded three such cards this holiday season.

Companies that sell digital greeting cards maintain that these products have a place in business. For example, they can be used to inform clients of an office move, to invite people to meetings or to thank clients. □

Businesses warm to Internet PC sales

▸ *Less time, paperwork helps to reduce costs*

By April Jacobs

WITH DELL COMPUTER CORP. racking up PC sales of $3 million per day at its Internet site — mostly sales to businesses — it appears corporate America is warming up to the idea of Internet-based PC procurement.

Corporate users, such as Detroit Edison Co., say configuring and buying PCs via the World Wide Web can reduce paperwork and even shorten delivery times.

Dell in December enhanced its industry-leading Web site with software that will let corporate users track their purchases from order to delivery via the Web. Dell also added the ability to get interactive troubleshooting help, based on the buyer's systems configuration.

The enhancements "impressed Wayne Hastings, an assistant vice president at Detroit Edison, a Detroit-based utility with 12,000 end users. He said the company buys hundreds of PCs a year — many over the Internet from Dell — and completes everything from ordering to electronic payment.

"I think the direct [sales] model provides one way for companies to lower their purchasing costs, because it consumes less of people's time. We also receive the machines much more quickly than before — sometimes a week sooner than ordering through a reseller or over the phone," Hastings said.

Dell pitches Optiplex desktop systems online to its users

Palo Alto, Calif.-based Hewlett-Packard Co. and Houston-based Compaq Computer Corp. have dipped their toes in the Internet sales market with limited offerings.

HP recently announced Web-based PC ordering for the small-business market and plans to expand into the corporate market later. Meanwhile, Compaq is selling high-end Presario desktops over the Internet.

Chris Goodhue, an analyst at Stamford, Conn.-based Gartner Group, Inc., said Dell is clearly ahead of its competitors in terms of electronic procurement. The other vendors' Web-based sales systems are "rudimentary" and aren't ready for large-scale corporate buying, he said.

Daniel Hanson, director of the Greater Cleveland PC User Group, Inc. in Cleveland, said consumers and corporations will take advantage of Internet-based PC sales, but consumers will lead the pack.

"The corporate market still needs the reseller channel" because corporate buyers like the hand-holding and security that comes from relationships with resellers, he said. □

Chase tech chief chases profits

By Thomas Hoffman

AS THE NEW technology chief at The Chase Manhattan Bank Corp., Joe Sponholz will do a lot more than just direct the bank's technology strategy. He will be expected to help the nation's top bank do what it does best — make money.

Sponholz, 54, will have his work cut out for him. Chase, like other big retail banks, is trying to expand its securities business, which generates significantly higher profits than retail banking operations.

The banking industry's share of customers' financial assets has plummeted from 36% of assets in 1980 to 23% in 1996 as customers sunk their nest eggs into higher-yielding investments such as the stock market.

Full-service brokerages such as Merrill Lynch & Co. and Smith Barney, Inc. "have been cutting into [Chase's] institutional [profit] margins" for years, said Larry Tabb, an analyst at The Tower Group in Newton, Mass.

Sponholz, who was named vice chairman of Chase's Technology Solutions group following a shake-up at the bank earlier this month, will be charged with orchestrating a technology strategy that lets Chase leverage its retail customer base and cross-sell higher-margin securities products, analysts said. □

Acquisition adds tools to Tivoli's TME

By Patrick Dryden

BY ACQUIRING yet another tool vendor, Tivoli Systems, Inc. boosted efforts to handle more tasks through its enterprise management framework.

The IBM division seeks the best of both worlds, analysts said: turning the Tivoli Management Environment (TME 10) into a do-it-all suite, yet still enabling users to integrate favored tools for specific functions.

FRAMEWORK EVOLVING

Tivoli will continue to sell these complete products while adding their functions to the core TME 10 framework:

Product	Function
IBM's NetView	Network discovery, status polling and alerts
Software Artistry's SA-Expertise	Help desk, trouble ticketing and change management
Unison Software's Maestro	Job scheduling, workflow management
Unison's Destiny	Output manager (in beta test now for Q1 1998 release)

Tivoli in December announced plans to buy Indianapolis-based Software Artistry, Inc., a minor vendor of help desk software, for about $200 million. Tivoli also completed the takeover of job-scheduling software vendor Unison Software, Inc. in Santa Clara, Calif.

Those acquisitions fill holes that TME 10 had when compared with the Unicenter TNG enterprise management suite from rival Computer Associates International, Inc. in Islandia, N.Y., said Ray Paquet, an analyst at Gartner Group, Inc. in Stamford, Conn.

As Tivoli moves toward CA's suite model, CA is emulating Tivoli's integration model, opening its suite with support for industry standards and integration interfaces, said Paul Mason, an analyst at International Data Corp. in Framingham, Mass. Users want tools and support from one vendor, "while preserving the freedom to keep what they already have and to switch whenever they want," Mason said.

For example, TME 10 user Charles Schwab & Co. already integrates Remedy ARS trouble-ticketing software from Tivoli partner Remedy Corp. in Mountain View, Calif. "My main concern about the acquisition is that Tivoli continues to work closely with Remedy," said Richard Weiss, architect for enterprise management systems at Schwab in San Francisco. "As long as my choice of help desk software integrates tightly, I'll be happy." Officials at Tivoli in Austin, Texas, said the acquisitions won't jeopardize relations with partners-turned-competitors. "But down in the trenches, the sales force will sell the Tivoli products that carry a commission," Paquet said. "The Unison and Software Artistry tools will show up in new sales and [then] may be pushed as replacements." □

[illegible] the 'net. Corporate Strategies, page 49

[illegible] Schuster from print to online multimedia. The Internet, page 53

In this issue

NEWS

6 **Novell ships** the long-awaited version of its directory for Windows NT.

10 **Technology fails** in California utility deregulation plan, forcing delays.

14 **Laptop thieves may catch** themselves with new software that phones home when the system is stolen.

16 **MQSeries gathers** momentum as software vendors build cross-platform capabilities into applications.

17 **Mainframes will hit** the Internet more smoothly in '98 with better TCP/IP links.

OPINION

8 **Are you ready** for '98? Neither is anyone else, Frank Hayes charges.

47 **Dead PCs cost** more than you think, especially if you try to revive and reuse them, John Gantz warns.

109 **You'll make** progress in '98 but won't fix all your problems, Bill Laberis predicts.

FORECAST 98

RESHAPING BUSINESS

25 **The Web revolutionizes service.**

29 **Paybacks** The hunt for help.

30 **Year 2000** — It's crunch time.

THE WIRED WORKPLACE

31 **Telecommuting to surge.** Deal with it.

30 **Access anywhere.** But not yet?

INTERNET GROWING PAINS

30 **Son of Internet:** bad seed?

41 **E-biz strikes.**

42 **Encryption makes sales.**

CURTAIN CALL

43 **Information = knowledge?**

TECHNICAL SECTIONS

CORPORATE STRATEGIES

49 **Gordon Petrash mines** pools of knowledge to boost business at Dow Chemical.

49 **Money isn't everything** in retaining IS staffers.

THE INTERNET

53 **Travelocity loses** money on the Web, but Sabre keeps it going.

53 **Knight-Ridder intranet makes** purchasing more convenient, less expensive.

THE ENTERPRISE NETWORK

59 **U.S. Air Force launches** massive worldwide network upgrade to keep battle plans in shape.

59 **Time, Inc. staffers needed** systems to get data, proving they needed to buy the systems.

SOFTWARE

61 **R/3 user retooled** the software to fit its business; now it has a product to sell.

61 **Data mining opens** spurious findings, but leading users keep prospecting.

63 **NT delays push** business users closer to Windows 98, sometimes unwillingly.

SERVERS & PCs

65 **Unix vendors flock** to support Hewlett-Packard/Intel's Merced technology.

66 **NT moves** toward the graphics workstation market as SGI and others accept it.

FEATURES

IT CAREERS

72 **IS managers must leap** at the first opportunity to hire good people.

76 **Retention strategies miss** the reasons employees leave, increasing turnover unintentionally.

ETC.

Company Index ____ 107
Editorial/Letters ____ 46
How to contact CW ____ 107
Inside Lines ____ 110

IS chooses to ignore preinstalled Explorer

By Carol Sliwa

NETSCAPE Communications Corp. may wish it were so. But even some of its most faithful corporate users — whose companies have standardized on Netscape's Navigator — aren't necessarily ripping Microsoft Corp.'s Internet Explorer browsers off their desktops.

"It just didn't seem worth the time to pull it off," said Sandy Sully, chief information officer at Xilinx, Inc. in San Jose, Calif.

What the faithful are doing in some cases is simply ignoring Internet Explorer or declining to provide support for it.

But companies that elect to leave two browsers on their users' desktops may encounter support problems and technical glitches.

BC Telecom, Inc., for example, hasn't bothered to remove Internet Explorer from its Windows desktops, but the help desk doesn't support it.

Users had to be told, "If anything breaks, don't phone back," said Rick Waugh, a senior systems analyst at Vancouver, British Columbia-based BC Telecom. Since company standards are well-publicized, that dictate hasn't produced much flak, he said.

A study done by Redwood City, Calif.-based Zona Research, Inc. found that the number of browsers per desktop dropped from 1.97 to 1.47 from January 1997 to September 1997. Zona analysts attributed the change partly to the rise of browser standardization policies at corporations.

Compaq Computer Corp., Hewlett-Packard Co., Dell Computer Corp., Gateway 2000, Inc. and IBM all say they currently ship PCs with Windows 95 and Internet Explorer because customers want it, not because they are forced to do so.

Charles Schwab & Co. wants its employees to use Netscape's browser, so the information technology staff of the San Francisco-based brokerage configured desktops with Navigator. With thousands of users in field offices, the company needs a standard configuration to reduce support costs, said Dawn Lepore, Schwab's chief information officer.

Charles Schwab's Dawn Lepore

The company needs a standard configuration to reduce browser support costs.

At a division of Knight-Ridder, Inc., the Internet Explorer icon was removed. "Our whole purpose of being here is to standardize and centralize," said Terry Smith, information systems director at Knight-Ridder's Florida-based Shared Services, Inc., which is consolidating operations via several intranet projects.

At Pratt & Whitney, a division of United Technologies, Inc., the IS department wants to ensure that staffers use only Netscape's browser. The firm is restricting access to sites with business value through the use of Netscape's proxy server and third-party filtering software.

"We'd like the ability to tell the PC suppliers what we want — either [PCs] with Explorer or without Explorer," said Kevin Redding, a World Wide Web architect at the company's East Hartford, Conn., facility. □

Corrections

Due to a reporting error, *Computerworld*'s Oct. 20 Buyer's Guide said Gartner Group, Inc. sells 400 CBT Group PLC titles. The two companies aren't affiliated. The article should have said 400 computer-based training titles.

Due to a production error, the headline for the Oct. 20 Buyer's Guide was incorrect. The headline should have read "Gurus for Hire."

The publisher of the book *Customer Connections* by Robert E. Wayland and Paul Cole, was incorrect in the Oct. 13 Managing section. The correct publisher is Harvard Business School Press.

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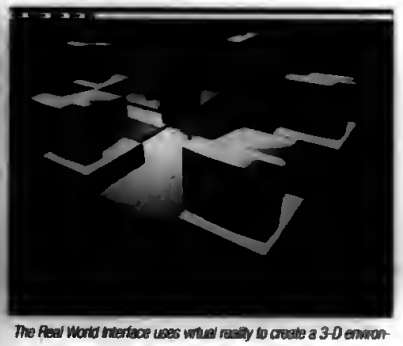

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Novell fights Microsoft onslaught with long-awaited NDS for NT

By Laura DiDio

NOVELL, INC. is shipping Novell Directory Services (NDS) for Windows NT, which could help stave off user defections to Microsoft Corp. — especially because Microsoft's NT 5.0 and its Active Directory have been delayed until late 1998.

After several delays of its own, Novell recently began shipping the software, which enables businesses to centrally manage their Windows NT networks and applications from within the NDS database.

NDS will be compatible with Microsoft's Active Directory when Windows NT 5.0 ships

NDS for NT, which has been under development for nearly three years, is part of Novell's ongoing strategy to give users complete interoperability between Novell's NetWare environment and Windows NT, including Microsoft's Active Directory in NT 5.0.

The delay in NT 5.0 is working in Novell's favor.

"We're not banking on futures. We need tools like NDS for NT to centrally manage our mixed NetWare and NT networks right now," said Rodolphe Jabbour, integration lab manager at General Motors Acceptance Corp. in Detroit.

"We can't wait another year or two for the Active Directory. Based on the current availability of NDS for NT, our plan is to keep using NetWare," Jabbour said.

Phil Easter, technology strategist at Greyhound Lines, Inc. in Dallas, agreed.

"NDS for NT is here now, and we have no idea when Windows NT 5.0 will ship. The ability to centrally manage my Windows NT users and applications is not something I'm going to delay until NT 5.0," he said.

Novell delayed the fall ship date for NDS for NT until December to incorporate security enhancements and add support for Microsoft's Exchange Messaging server.

Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston, said the added functionality "was well worth the wait."

"We have customers who are desperate for NDS for NT so they can manage Exchange E-mail. It can cut management time by at least one-third," Sakakeeny said.

Jon Oltsik, an analyst at Forrester Research, Inc., a Cambridge, Mass., consulting firm, said the availability of NDS for NT wouldn't forestall defections from NetWare to the rival Windows NT platform in small and midsize businesses.

NETWARE EFFECT

But Oltsik said the delay in NT 5.0 may help keep the high-end NetWare enterprise customer base loyal. "Windows NT for the enterprise is an oxymoron at this point. Customers will use NDS for NT, and Novell has a shot at keeping high-end users," he said.

In an interview with *Computerworld* at the Comdex/Fall '97 trade show, Novell CEO Eric Schmidt said that because virtually all of Novell's customers are also Microsoft customers, "It's in our customers' interest for us to work with Microsoft to ensure that our products interoperate."

NDS for NT lists for $65 per client, but street prices are more likely to be $30 to $45 per client, said Sam DeStasio, Novell's product marketing manager for directory enabled services. □

Retailer keeps help desk staff happy

▸ *Variety is key to retaining valuable QVC workers*

By Julia King

FRUSTRATED, CRANKY, burnt-out and highly experienced.

Three years ago, that was the profile of a typical help desk staffer at QVC, a $2 billion electronic retailer in West Chester, Pa.

"People were taking calls eight hours a day, and they felt there was no opportunity for career growth," said Carol Steinberg, director of end-user services. "We were losing good people. I also knew we would have lost more if we didn't provide them with exposure to different things."

So Steinberg established a retention strategy that involved reducing staffers' telephone hours to a half-day two times a week, for a maximum of eight hours per week, or 20% of their total time on the job.

CONTRACTOR HELP

The rest of the time, the help desk is staffed primarily by contractors, who were brought in specifically to address the burnout issue and help the retailer retain valued and experienced information systems workers.

QVC pays contractors from PC Help Services, Inc. in Clark, N.J., between $23 and $40 per hour.

The contractors are trained by QVC help desk employees, whose duties have now been expanded to include installing and upgrading equipment, providing network support and training end users.

Since implementing the anti-burnout strategy, turnover problems have all but disappeared. QVC hasn't lost a single valuable employee from its 20-person support staff, Steinberg said.

What is notable is QVC's adoption of a strategy that is specific to the help desk, said Patrick McBride, an analyst at Meta Group, Inc., a Stamford, Conn., consultancy.

"The other way most people have gone is to get frustrated and outsource [the help desk]," he said.

Another typical help desk scenario, McBride said, is that of "the IT purgatory or penalty box where you're sent if you're a bad IT person." □

DOLLARS AND SENSE

The pros and cons of Internet mail vs. client/server mail

Advantages

- Lower server costs; each server can support more users per server
- Lower support costs; administrators can manage more users
- Lower training costs; systems are easier to use
- Less downtime; systems are less likely to fail

Drawbacks

- Higher systems management costs; products lack built-in tools
- Higher directory services management costs
- Lack of groupware features

Internet mail: Low cost but questionable value

By Barb Cole-Gomolski

INTERNET MESSAGING is known for being cheaper to install and manage than proprietary messaging systems such as Lotus Development Corp.'s Notes or Microsoft Corp.'s Exchange.

But it may not actually provide as much overall value to the business, according to researchers and users.

IP-based messaging is great for electronic mail, but it lacks the rich client functionality, directory services, mail management and groupware features that companies covet.

LOW COSTS

Internet messaging's low overhead stems from the fact that each server can support up to thousands of users, and training costs are lower because clients are typically familiar browsers.

On the downside, companies may do without key messaging services or spend big to shore up the shortcomings by purchasing third-party software if they go with Internet messaging, users said.

The financial services division of Nationwide Insurance Co. in Columbus, Ohio, uses Netscape Communications Corp. browsers to access electronic mail from its Domino servers.

But the company also has had to keep its legacy IBM OfficeVision system up and running, because the insurer depends on its enterprisewide calendaring and scheduling feature, said Bruce Barnes, the division's chief information officer.

Barnes said Internet messaging is "fast cheap and always there." But one missing feature can mean that a company has to run dual systems, he noted.

"Internet mail is fine if you just want E-mail," said Von Arpiarian, MIS coordinator at Rancho Industries, Inc., an automotive aftermarket company in Long Beach, Calif. "Internet messaging wouldn't be enough for us, because we're planning on expanding our use of shared database applications," said Arpiarian, who installed Notes at the company.

Creative Networks, Inc. in Palo Alto, Calif., compared the cost of ownership for file sharing, client/server and Internet mail systems.

Its new study showed that mail systems built on native IP cost about $1,370 per year per user, including software, administration and downtime. Client/server messaging costs $3,355 per year per user, according to the report.

"Open messaging systems provide efficient and reliable E-mail," said Nina Burns, president of Creative Networks. But going to open messaging is a big leap because those systems have traditionally lacked directories and messaging management, she said.

The adoption of Internet mail systems could accelerate, though, as messaging protocols — including the Lightweight Directory Access Protocol directory standards and the Internet Message Access Protocol 4 — become more widely implemented. □

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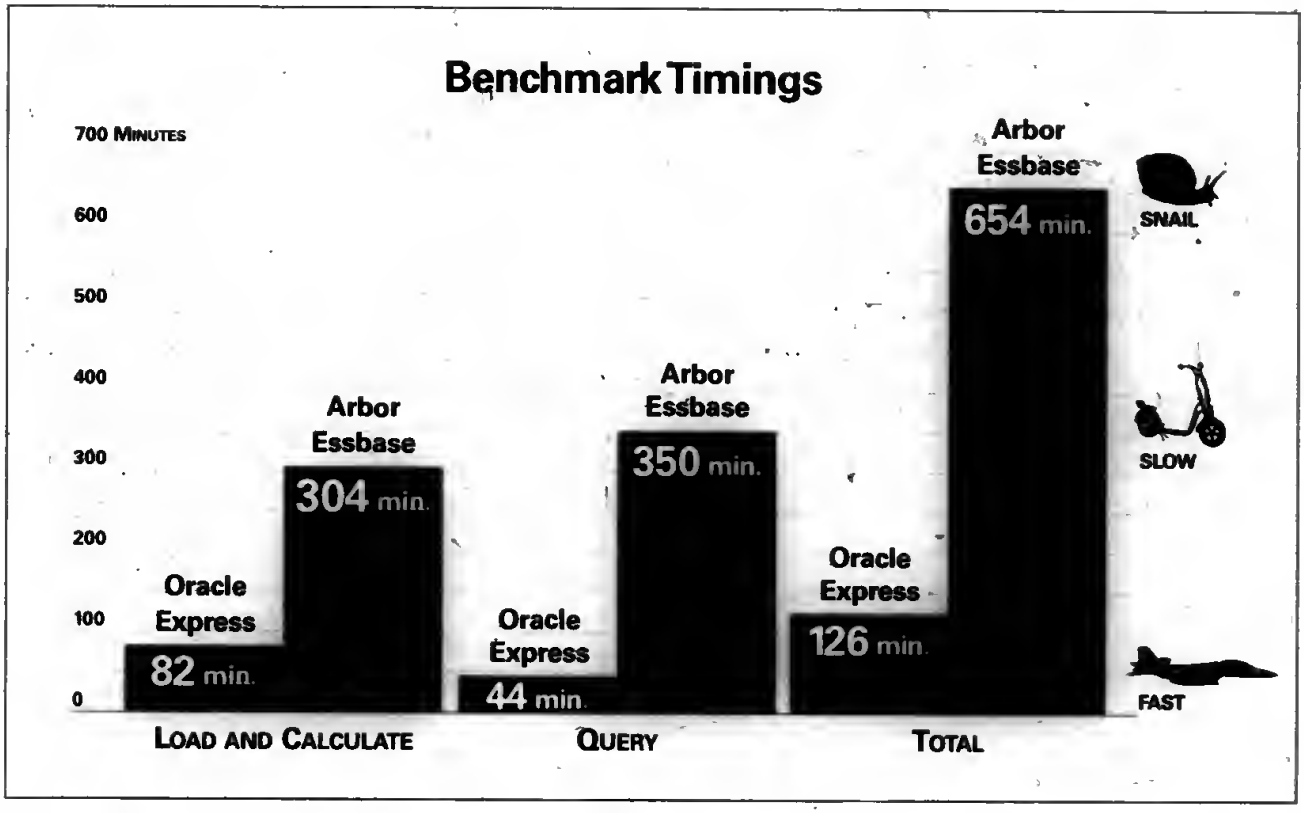

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FRANKLY SPEAKING

Ready or not ...

FRANK HAYES

READY FOR 1998?

Don't worry — nobody else is either. Somehow the year 2000, the Justice Department, too few programmers and too much Internet have crept up on users and vendors alike.

But you'd better get ready fast, because it's here.

Microsoft certainly isn't ready for the mauling it's about to take from the Justice Department's antitrust pit bulls. U.S. District Court Judge Thomas Penfield Jackson has already all but called Microsoft's lawyers liars for claiming no one can safely strip Internet Explorer from Windows 95. This one will get ugly fast.

And don't expect Congress or an appeals court to leash Jackson or muzzle the Justice attack dogs. Bill Gates eventually will learn that struggling against that consent/decree noose just pulls it tighter — but he won't figure it out in 1998.

And Microsoft's big fight with **Sun** over **Java**? Call it a no-contest. Microsoft no longer needs Java, and Sun won't need Microsoft once Sun's Java Activator lets users plug standard Java into Internet Explorer. You'll see a settlement of the megafoes' lawsuit by December. But once free of its Java license, expect Microsoft to quickly release a Visual J++ compiler that generates native Windows programs from a language that looks a lot like Java.

Unprepared? 1998 crept up on users and vendors alike.

Year 2000 fixes will slog forward, but the big year 2000 fight will pit corporate lawyers and lobbyists against regulators who want companies to reveal their year-2000-fix plans and budgets. The corporate side will manage to block a mandatory year 2000 line item in 1998 annual reports, but stockholders won't be happy — and class action specialists will sharpen their knives.

The **programmer shortage** will hit everybody hard, but it will hit government agencies the hardest. They can't cough up big bucks like the private sector can for top talent or consulting help. Watch for state agencies especially to go begging for information systems help this year.

Lawmakers will keep trying to rein in **Internet porn** and **encryption** without success. A new Communications Decency Act will make it through Congress but not the courts.

And though software vendors will keep building weak encryption into their commercial products, anyone who really wants strong encryption — like crooks and spies — will be able to get the technology easily enough.

Asia's economic bust will wreak havoc with software vendors — who were counting on the Far East for big sales growth this year — but will rain cheap memory chips on hardware vendors. Until consumer-product companies start selling lots of things that take lots of RAM (like digital TVs and DVD players), expect new PCs stuffed with gargantuan amounts of memory.

Expect boatloads of **bloated software** designed to fill up that memory, too — and plenty of puzzled industry analysts who can't figure out why Windows 3.1 still reigns on most corporate desktops.

Small World Wide Web sites will make money, and **big Web sites** will run in the red. And most consumer electronic-commerce dollars will go to a lot of companies that are too small to make it out of the "other" slice on the pie chart.

IBM will keep renaming its mainframes "large enterprise servers" or "high-volume transaction engines." Sun and **Sequent** will match Big Blue buzzword for buzzword when peddling their own steroid-enhanced servers.

Oracle will discover that — gosh! — its main business really is database software, not network computer hardware, after all.

And in everyone's favorite guessing game, **Apple** still won't get a new CEO. Nobody wants the job, and Apple's board wants Steve Jobs.

Besides, Apple spent the last half of 1997 without an official boncho, so what's the rush? □

Hayes is Computerworld's West Coast bureau chief. His Internet address is frank_hayes@cw.com.

SHORTS

Spam battle heats up

A group of advertisers has threatened to give away the E-mail addresses of 5 million America Online, Inc. subscribers to combat the online service provider's anti-spam efforts. The National Organization of Internet Commerce, based in Chino, Calif., said it will unveil the names on its Web site (www.noic.org) on Jan. 8 to support the cause of bulk E-mailing of advertisements, which providers such as AOL have tried to block. AOL has threatened to sue the group, while an Internet provider trade group has called the scheme commercial terrorism.

Judge guts telecom law

A large part of the 1996 Telecommunications Act is unconstitutional, a U.S. federal judge ruled last week. That's because the law effectively singled out regional Bell operating companies for punishment while giving long-distance carriers a free hand, according to the ruling. The law required Baby Bells to open up their local markets to long-distance companies such as AT&T Corp. before the Baby Bells would be allowed to compete in the long-distance markets. The decision could come as a blow to many large businesses that have voiced a desire to have their long-distance companies also provide local services. An AT&T spokesman said the company will appeal the ruling, as will the Federal Communications Commission.

PC utility to get its own fix

Symantec Corp. said it will ship a bug fix this quarter for its Norton Utilities 3.0. The package, which shipped in November, has caused a number of system shutdowns, lost hardware settings and problems reloading Windows, according to postings from early users on a Usenet group. Separately, rival Network Associates, Inc. has dropped its $1 billion defamation lawsuit against Symantec. The decision came because a U.S. court refused to stop Network Associates from selling its PC Medic software, which Symantec claims infringes on many of its own patents.

Chevron plans outsourcing deal

Chevron Information Technology Co. is negotiating a five-year, $450 million outsourcing contract with Electronic Data Systems Corp. in Plano, Texas. Officials at the information systems arm of San Francisco-based Chevron Corp. said they are also talking with GTE Corp. in Stamford, Conn., and Sprint Corp. in Kansas City, Mo. Chevron plans to outsource for mainframe systems and networking support services. The move will affect 400 workers, whose future employment with the company has yet to be determined, Chevron said.

Oxford Health slapped with fine

The New York State Insurance Department has fined Oxford Health Plans, Inc. $3 million after reviewing billing problems caused by a problematic Pick-to-Unix billing system conversion. Oxford reported in October that its systems had overestimated revenue and underestimated medical costs [CW, Nov. 10]. The report cited "poor planning and/or inexperienced management" as the root of most of the Norwalk, Conn.-based health insurer's woes.

Network know-how in demand

More than 60% of systems administrators earn salaries between $40,000 and $70,000, according to a survey by the Systems Administrators Networking and Security Institute in Bethesda, Md. The survey of 1,600 people was conducted in the U.S. and abroad at large and midsize companies, universities and government labs in September. According to the poll, two factors are driving the high demand for systems administrators and network security specialists: the continued move from mainframe applications to distributed systems and the proliferation of corporate World Wide Web sites.

Holiday PC buying spree

A PC buying splurge over the holiday season is expected to raise the number of households with PCs by 1.5 million by Jan. 31, 1998, according to a new study by International Data Corp. in Framingham, Mass., and A. C. Nielsen Corp. in Stamford, Conn. The study says 48% of those consumers are first-time buyers, 30% of whom plan to spend less than $1,250 on their new PC. The sub-$1,000 PC motivated many people to buy, according to the poll. Another 38% of consumers planned to spend more than $2,000, and 70% expected to spend more than $1,250 for their new computers.

SHORT TAKES Raymond E. Douglas, 48, has been named vice president of systems and technology at **The New York Times Co.** ... PC-to-server connectivity software maker **Hummingbird Communications Ltd.**, in North York, Ontario, acquired decision-support tools vendor **Andyne Computing Ltd.** in Kingston, Ontario, in a stock deal valued at $60 million. ... **MCI Communications Corp.** in Washington said it would provide local calling services for large businesses in Cincinnati, Dallas, Houston, Fort Lauderdale, Fla., San Antonio and Washington. ... Document management software maker **PC DOCS Group International, Inc.** in Toronto, said it made a $20 million bid to acquire search engine maker **Fulcrum Technologies, Inc.** in Ottawa.

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Computer glitch delays power deregulation

By Gordon Mah Ung

CALIFORNIA'S RUSH to the leading edge of power deregulation recently turned into the bleeding edge amid numerous computer glitches and test delays.

The plan was to launch a competitive market, allowing customers to choose their electricity provider by a Jan. 1 government deadline. But the computer snafu means that deadline won't be met and costs may soar.

Officials at the two new companies charged with taking over the auctioning and transmission of power blamed the delay on an overly aggressive schedule, systems incompatibilities and inadequate testing.

While both of the new companies debug and test systems, they will incur costs of $400,000 per day while they operate without the revenue stream that would have come from running the market and operating the grid. Consumers may ultimately absorb the cost.

But the real concern, according to Arthur O'Donnell, editor of the San Francisco-based newsletter "California Energy Markets," is that a faulty computer system could lose control of which company supplied what power and at what price. "That's what it really comes down to — tracking the money," he said.

The project is "as daunting and as important as building a bridge across the San Francisco Bay," O'Donnell said.

At press time, it wasn't clear whether the delay would last weeks or months.

"Had it been a normal project, not driven by a legislatively imposed date, it would have been a two- or three-year project," said Jeffrey Tranen, CEO of the state-chartered California Independent System Operator (Cal-ISO) in Folsom.

POWER SURGE

California power deregulation timetable

August 1996

- **State legislature mandates restructuring of the market by Jan. 1, 1998**

May 1997

- **The California Public Utilities Commission approves direct access to power suppliers by consumers**
- **The California Independent System Operator and California Power Exchange are formed to run the power grid and commodities market for electricity and to begin to build the systems**

The companies were chartered in May 1997 and given the daunting task of creating the systems by the end of the year.

Cal-ISO, acting like an air traffic controller, will distribute electricity throughout the power grid. It is supposed to work in concert with the California Power Exchange, which will run the electricity market like a stock exchange.

"Some of the assumptions that the ISO was using to design their systems were different from the assumptions that the Power Exchange was using to design its systems," said Dennis Loughridge, CEO of the Power Exchange.

The companies hired Swiss contractor ABB Asea Brown Boveri Ltd. to build an interface between the two incompatible systems. The new system software arrived on time in early December, but the companies haven't been able to complete enough testing to go live.

Other power utilities undergoing federally mandated deregulation are watching California's problems closely.

"We've got a lot of interest in California. They are the largest state, [and] they are the bellwether state," said Randy Wheeless, a spokesman for Duke Power Co. in Charlotte, N.C. He said North Carolina is about three years behind California in its deregulation process. □

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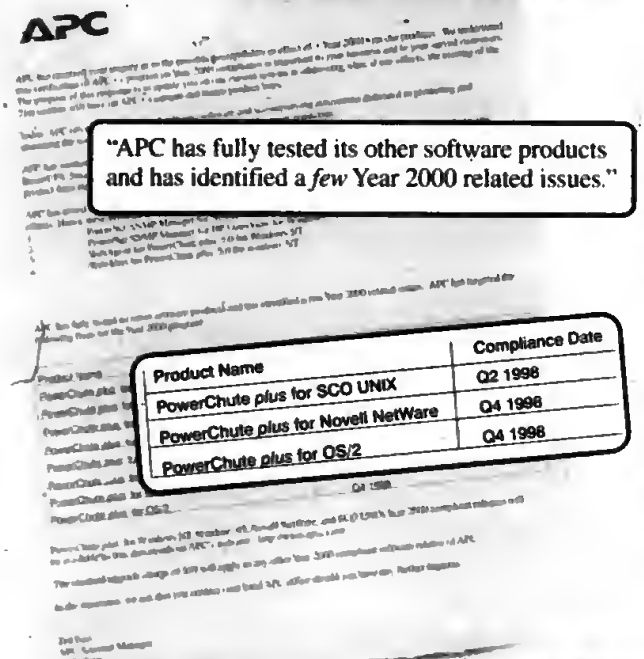

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Laptop thieves beware

▸ *Software tracks unauthorized users, sends alerts*

By Kim Girard

EXPERTS SAY about one in 50 laptops is stolen, so some companies install sensory alarms or locks to protect their investment and data.

But a new breed of software — which costs about $90 per user — is on the market to help catch thieves.

Basically, the software captures the telephone number of an unauthorized user who enters a wrong password or uses the laptop's modem.

SECURITY MONITORING

The software then uses the modem to silently alert the authorized user's network manager or a security monitoring center.

The two leading software and monitoring services are CompuTrace from Absolute Software Corp. in Vancouver, British Columbia, and CyberAngel from Franklin, Tenn.-based Computer Sentry Software, Inc.

Computer Sentry Software in January will release CyberAngel EXR, which adds encryption options to further protect laptop files. It costs $75 per user.

With CyberAngel, if someone enters a wrong password during start-up, the laptop dials up Computer Sentry's monitoring system. The company alerts the authorized user via electronic mail, fax or pager and provides the unauthorized user's telephone number and IP address.

With CompuTrace, the laptop's modem automatically calls a monitoring center at regular intervals.

If a laptop with a certain serial number is reported missing, the monitoring center captures the phone number and location of the missing laptop the next time it dials in. A theft recovery team coordinates with police to recover the laptop.

Chilton Co., a publisher in Radnor, Pa., invested $4,200 in CompuTrace software to keep track of 75 laptops.

The company in 1997 recovered three laptops — the same number of machines stolen in 1996 — as a result of CompuTrace, said Jack Cahill, business manager at Chilton.

CLOSE TO HOME

One laptop, a $7,000 IBM ThinkPad, recently was retrieved when the daughter of an employee who had taken the laptop home without permission dialed out with the modem, Cahill said.

Dyrk Halstead, president and CEO of Computer Sentry, said 80% to 90% of his corporate customers buy the product to prevent unauthorized use of machines within companies. The rest want it to thwart abuses or theft by outsiders.

Some information systems departments see the software as a godsend, while others balk at the cost and hassle of installing and maintaining additional software, said Gerry Purdy, president of Mobile Insights, a Mountain View, Calif.-based consultancy.

Bob Ryan, national account sales director at ADT Securities Services, Inc., a computer sentry software reseller in Boca Raton, Fla., said 20 of the company's national account managers use CyberAngel to protect customer information.

"That laptop could have a CEO's home phone number on it" or details about home and business security systems, Ryan said. "We're a security company. We expect [the sales force] to keep all information safe." □

PHONE HOME

Product	Cost
CyberAngel	$29.95 per seat for software, $60 monitoring fee
CompuTrace	$89.95 for one year of monitoring, $139.95 for two years

Both companies offer volume discounts

Backup offered for mainframe data

By Tim Ouellette

DATA CENTER MANAGERS looking for better backup performance may want to yank the data off their corporate networks.

Instead, companies can exploit newly enhanced products that route backups over high-speed data channels found on the mainframe or large disk storage systems.

Users and observers say the costs associated with borrowing mainframe cycles for distributed systems backups are negligible — and can be offset by gains in speed and flexibility.

The alternatives are needed as users ramp up application loads and search for ways to use their precious network bandwidth more effectively, said Carl Greiner, an analyst at Meta Group, Inc. in Stamford, Conn.

One option is the Link/9000 Escon mainframe interface card from General Signal Networks, Inc. in Shelton, Conn.

General Signal the week of Jan. 5 will announce that it has tuned the setup to boost backup speeds by up to 90%, compared with standard database backups. The tuning is targeted at shops that run IBM's Adstar Distributed Storage Manager (ADSM) backup software.

That trick worked well recently at travel reservations company Galileo International in Rosemont, Ill.

The company plugged Link/9000 cards into its Unix servers to replace a backup scheme that included a router and Token Ring network.

The result was that backup and restore speeds increased dramatically, said Gregg Powers, manager of Galileo's systems solution center.

But speed wasn't the main goal. Galileo wanted to have enough wiggle room to expand strategic applications without creating damaging bottlenecks.

"As we expand into larger systems and data warehouses, we had concerns about using ADSM over our old infrastructure because it was just simply too slow," Powers said. "The bottom line is this will extend the size of the warehouses we can put on open systems."

Computer Network Technology Corp. in Minneapolis also provides interface cards to the mainframe. □

& Montana's mainframe-based application puts human services online. Page 65

DOJ approves IBM/StorageTek OEM deal

By Tim Ouellette

DATA CENTERS NO longer have to wonder about the future of IBM's mainframe Ramac Virtual Array (RVA) disk system.

After more than a year-long antitrust investigation, the Department of Justice on Dec. 18 gave its stamp of approval to the 1996 disk storage OEM agreement between IBM and Storage Technology Corp.

The deal spawned the RVA, the mainframe disk system originally developed by Louisville, Colo.-based StorageTek and now sold solely by IBM.

After the Justice Department's decision, the two companies immediately extended their contract, which was slated to end in 1999, through the year 2000.

But there could be more questions than answers about IBM's long-term storage strategy, observers said, because IBM is developing its own high-end storage scheme for both mainframes and open systems, called Seascape.

"With this joint agreement, you have to wonder how it all fits into place [with Seascape]. It is not clear with the user community," said John Webster, a storage analyst at The Yankee Group in Boston.

SOME CONCERN

Justice Department officials had been concerned that with two of the four major players in the mainframe disk market joining forces, the reduced competition may have kept disk prices a little higher than they would have been, said Bob Tasker, an analyst at The Yankee Group.

Since inking the deal, though, IBM has continued to lose mainframe storage market share to rival EMC Corp. in Hopkinton, Mass.

Now with the new agreement in place, IBM and StorageTek officials said they could ramp up development on planned upgrades in 1998.

Those include a remote copy feature, new IBM Serial Storage Architecture disk drives and the addition of support for Unix and Windows NT data on the traditionally mainframe-oriented RVA.

"I believe the [Justice Department] investigation did hold back some RVA sales," said John McArthur, an analyst at International Data Corp. in Framingham, Mass. "High-end users are extremely risk-averse."

FREE TO COMPETE

Highlights of the IBM/Storage Technology deal

- Department of Justice OKs 1996 IBM/StorageTek disk technology deal
- IBM and StorageTek extend their disk technology OEM agreement through 2000
- Tape technology isn't included
- The companies will add new drives, an extended remote copy feature and open systems support to the Ramac Virtual Array in 1998

For example, Watkins Motor Lines, Inc. has been in the middle of a major data center relocation and was deciding on a mainframe disk upgrade before the Justice Department's decision came down.

"We had a big deal on the table between EMC and IBM, so I was keeping close tabs on this," said Archie Simpson, manager of computer operations at the Lakeland, Fla., firm. Watkins chose to buy two new RVA arrays from IBM.

"EMC liked to point fingers that the end of the [StorageTek/IBM] deal was fast approaching, so we thought it very important that the relationship grows stronger," Simpson said. □

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IT soothsayers prophesy top news events for 1998

CONTINUED FROM PAGE 1

"We all will still be trying to figure out network computers – what they are and what they can do for us."

– BOB TUCKER, CHIEF TECHNOLOGY OFFICER AT QST TECHNOLOGIES, INC., A MUTUAL FUND SERVICES VENDOR IN KANSAS CITY, MO.

"You'll see lots happening in the field of home networks. We are living in a world beset with smart phones, PDAs, network computers, Web-enabled TVs, printers, fax machines and other stuff around the house, and they will all need to talk to one another."

– ARNO PENZIAS, A 1978 NOBEL PRIZE WINNER AND CHIEF SCIENTIST AT THE BELL LABORATORIES UNIT OF LUCENT TECHNOLOGIES, INC. IN MURRAY HILL, N.J.

Microsoft Corp.'s battle with the Justice Department is the big issue for 1998. "On the one hand, it's nice to see a simple, clean solution from one guy. But I also think you need competition.

However this shakes out, it's really important to get it resolved quickly because it will shape a lot of what we do going forward. Right now, it's the uncertainty that kills you."

– JIM DILEO, INFORMATION TECHNOLOGY CHIEF AT THE NEW YORK ADVERTISING FIRM THE MACMANUS GROUP

"This will be the year when the year 2000 finally becomes serious."

– GENE AMDAHL, CHAIRMAN OF COMMERCIAL DATA SERVERS, INC. IN SUNNYVALE, CALIF.

"Various flavors of improved IP are going to have potential, either the [World Wide Web Consortium's] new specs or technologies like Sitara's. [They offer] improved handshaking so IP is a far more robust thing – if that stuff actually works. It looked pretty good in demo. That has the capability of being [somewhat] profound. Elsewhere, you look at Microsoft vs. everybody else in the universe."

– MITCHEL AHERN, VICE PRESIDENT OF THE WEBMASTERS' GUILD IN CAMBRIDGE, MASS.

"The user community [will] stand with Microsoft against the Department of Justice. As much as we hate Microsoft, we love 'em just as much. This'll be the first time you get the actual businesspeople in between the government and a monopoly business."

– PAUL MASZCZAK, IT CORPORATE DIRECTOR AT C. R. BARD, INC., A HEALTH CARE COMPANY IN MURRAY HILL, N.J.

"We'll move more and more to a different way of doing work – more working 'from wherever and whenever.' Kids coming out of school don't have the concept of the way work was done traditionally in the office. [Demand for telecommuting capabilities at Boeing] far outreaches the ability to support it with the infrastructure."

– BARBARA REEVES, VIRTUAL OFFICE PROGRAM MANAGER AT THE BOEING CO. IN SEATTLE

"The hallmark of 1998 will be implementation rather than innovation. I see innovation slowing down as businesses take time to better utilize their Web tools and integrate Web front ends to back-end data. ... We can also expect Microsoft to do a lot of arm-waving about two things: Enterprise NT, which is an oxymoron, and next-generation operating systems, which absolutely aren't required in a corporate setting."

– JON OLTSIK, AN ANALYST AT FORRESTER RESEARCH, INC. IN CAMBRIDGE, MASS.

For public-sector chief information officers, after year 2000 testing, the next priority in 1998 is "to [rewrite systems to] incorporate the greatest changes in welfare since FDR."

– JOHN THOMAS FLYNN, CIO FOR THE STATE OF CALIFORNIA

"I think the big news in '98 is where NT 5 is going and the effect it's going to have on Novell and its strategy for NetWare. Novell is still struggling. They do have good market share and a lot of loyal users, but so did Apple. ..."

– DAN TANNENBAUM, A DEVELOPER AT HELICOPTER SUPPORT, INC. IN ORANGE, CONN.

"Java will take over the world. Despite Microsoft's efforts to the contrary, Java will become the most popular programming language in use for commercial application development and for corporate development of server-based applications. Electronic commerce takes off – the momentum has already started in '97. But for most people, 1998 will be considered the year that electronic commerce on the Internet really took off. I predict that Internet commerce will account for at least $10 billion in '98. The largest volume will be in the business-to-business market."

– PATRICIA SEYBOLD, PRESIDENT OF PATRICIA SEYBOLD GROUP IN BOSTON

Middleware vendors turn to MQSeries

By Tim Ouellette

MIDDLEWARE VENDORS are starting to take the same road to application integration: IBM's MQSeries.

With more shops turning to MQSeries as a basic transport mechanism among different platforms and applications, other middleware vendors with more features are linking to MQSeries and building off it.

Middleware, such as MQSeries, does the dirty work of masking communications complexities among different applications and platforms.

ADDED FUNCTIONS

But other middleware vendors' products include features such as security, data conversions, routing and message identification that MQSeries doesn't offer.

For example, New Era of Networks, Inc. will ship its Neonet middleware with full MQSeries integration in January. And by mid-1998, Micro Tempus, Inc. in Montreal will offer file transfer capabilities over MQSeries with its Tempus Connectivity Solutions middleware.

DataGate, middleware from Software Technologies Corp. in Monrovia, Calif., treats MQSeries messages as any other message that it can receive, translate and secure.

And Neon Systems, Inc. in Sugar Land, Texas, uses MQSeries to transport messages. Its Shadow Direct software then handles all the extra programming work MQSeries normally requires on the client and server side to do advanced processing of the data in the message.

"If we are getting something from MQSeries, we don't care," said Bob Kelly, a DataGate user and assistant director of information services at The New York Hospital. "The advantage over MQSeries is that DataGate can change what messages look like when they get to the receiving end."

That means when the hospital's mainframe sends what Kelly calls a "really ugly SNA record," DataGate can automatically convert the message into HL7 format — the health care industry's standard message format. It then can be easily passed among hospitals. □

TCP/IP vendors to boost data center support

▸ *IBM and Interlink face off with upgrades to their products*

By *Tim Ouellette*

DATA CENTERS can expect better-than-ever support for TCP/IP networking in 1998 after key vendors improve their mainframe TCP/IP stacks.

The moves come as more companies are running their TCP/IP networks right to the mainframe in order to make the host machine a bigger player in client/server and electronic-commerce applications.

The two main providers of TCP/IP communications stacks for the S/390 — IBM and Interlink Computer Sciences, Inc. — are upgrading their products for delivery in the first half of 1998.

"Most of the larger mainframe sites are running TCP/IP off the mainframe," said John Young, a consultant at The Clipper Group, Inc. in Wellesley, Mass. "Anyone with client/server strategies that include the mainframe will want to connect to outside LANs," he said.

And users need TCP/IP for that, Young added.

Interlink has been a credible competitor to IBM, but with IBM's improvements "the only trick Interlink has in its bag is Cisco."
– Audrey Apfel, analyst, Gartner Group

For example, Central Illinois Light Co. runs the current IBM TCP/IP stack on its Multiprise 2000 mainframe.

"In 1998, we will have a couple of Unix systems coming online for gathering data from workers in the field, and we want them to update the mainframe via TCP/IP," said Bud Dowell, manager of information technology services at the Peoria, Ill., utility.

IBM's expected performance boost will help make this a smoother process, he said.

TARGET DATES

IBM in March will ship a quicker rewrite of its TCP/IP stack with support for all native mainframe applications. The current version supports only Unix applications ported to the mainframe.

With the IBM stack, users will get tighter integration with the OS/390 mainframe operating system, said Audrey Apfel, an analyst at Gartner Group, Inc. in Stamford, Conn.

Officials at Interlink, in Fremont, Calif., recently said they plan to update their TCPaccess 5.2 product by midyear.

That version will add to Interlink's traditionally strong performance and include tighter security — to reassure jittery information systems managers who are leery of opening up their mainframe goodies to Internet hackers.

Interlink also plans to build links between the two TCP/IP stacks. So users who want Interlink's performance and IBM's slew of application interfaces and features will be able to take advantage of both.

Interlink hopes to reach more users via a deal with networking giant Cisco Systems, Inc. in San Jose, Calif. Cisco plans to resell the TCP/IP product under the name Cisco IOS/390.

Interlink has been a creditable competitor to IBM, but with IBM's improvements "the only trick Interlink has in its bag is Cisco," Apfel said.

She predicted that Cisco will build the TCP/IP stack into its products much like IBM has done with the OS/390 Communications Server.

Cisco hasn't revealed any specific plans to do so. □

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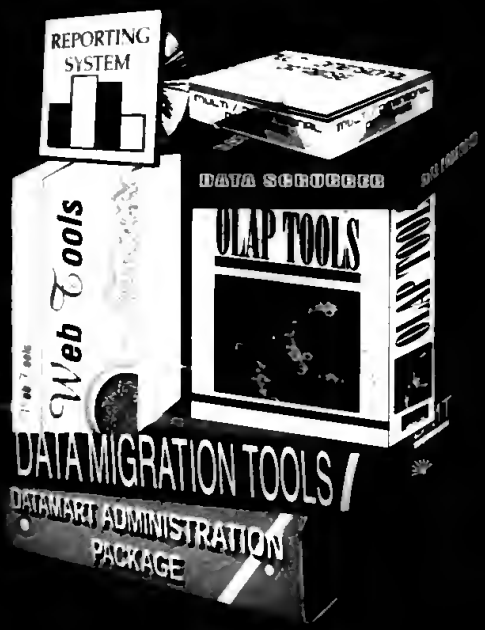

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COMPUTERWORLD Forecast

IS takes center stage

[illegible] footlights is a new generation of IS leaders, such as BT [illegible] John Herron Jr.

THIS YEAR'S SCENE-STEALERS:

- IT's starring role
- The wired, wired workplace
- Internet2 — The sequel
- Leaders in the limelight

the workers

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[illegible]
[illegible] Director
[illegible]

SPRING
Internet
World 98

Put the Net to Work.

internet

EDITORS' NOTE

nter IS, triumphant.

ow does it feel to be the star of the show?

trange, probably. Information systems is accustomed to ng a supporting role.

ou've alway been a solid character actor, thrashing away systems so others would look good. You didn't cognition, but then you didn't expect much.

ou labored for years to become an overnight sensation. sharpened your chops, adding key technical skills and iness moxie. Today's business environment and your r demand it; without a well-choreographed IT strate- ou put your business' competitiveness at risk.

hat's why your organization is counting on you and the to find the best, most secure ways to con- mmerce. To ensure that road warriors can access usiness-critical information anytime, anywhere. To bring the enterprise into the next millennium sans apocalyptic year 2000 bugs.

And with time counted in Web weeks, each act needs to be a showstopper.

So what's next? Given expected strong economic growth and technology's unrelenting progression, your role is relatively assured. There's no understudy waiting in the wings. The skills shortage will go on unabated well into the next decade.

But then again, the work will become more challenging. And hopefully, the tools and technologies will eventually mesh with your ability to maximize their use. It's in embryonic areas such as knowledge management — where raw data is turned into information that can be acted upon — that such promises will be tested in 1998 and beyond.

This special supplement (and related online material at *www.computerworld.com/forecast98*) is your playbill for the aforementioned issues. And it details the concerns and strategies under consideration by some of your colleagues and competitors.

What? You, stage fright? Nah.

Break a leg.

Alan Alper

Anne McCrory

Steve M Ulfelder

PETER SOARES

COMPUTERWORLD FORECAST '98

Contents

Calling all customers. The World Wide Web soon will revolutionize service. By Ki S. Nash

Payback time. In a booming economy, good help will cost you plenty. By Ste e lfe der

The pressure builds. It's crunch time for year 2000 work. By Robert Scheie

Hold that line. Telecommuting will continue its surge, IS will have to keep up. By K m G ard

Remote control. Field access to corporate data is looking sharper. By Gordon

Smarter, better, faster, cheaper. Personal communications devices will take off. By Ste a t D ck

Strain for 'net gain. Universities and researchers prepare their own Son of Internet. By A t

Enterprise eyes. Stubborn misgivings about electronic commerce will fall away.

Safety in numbers. Emerging encryption methods are selling Web commerce to a eery world.

Today's IS leaders have rich, diverse yesterdays. They a e t reason tomorrow is so exciting.

John Herron Ji

Sherman Woo.

Terrell Jones. R

Morgan Barlow

FORECAST ONLINE

EDITORS ALAN ALPER, ANNE MCCRORY, STEVE ULFELDER

MANAGING EDITOR MICHELLE DAVIDSON

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| YOUR CUSTOMER SERVICE OPERATION IS PROBABLY AN 800 NUMBER NOW. BUT IN '98, WATCH FOR THE 'WEBOLUTION' |

Calling all Customers

BY KIM S. NASH

W hat passes for In[illegible] service today will [illegible] aint a year from now.

For man[illegible] mating" service has m[illegible] an assigning an employe[illegible] to electronic mail sent b[illegible] using a corporate World [illegible] Web [illegible]. The agent scrambles m[illegible] to dre[illegible] answers from company records that m[illegible] or may not be in a searchable database.

The process all but ensures that customers can get quicker, better service with a telephone call. In fact, a recent *Computerworld* examination of E-mail service at 23 big companies found that just nine responded within a day. Three sent no reply at all [CW, Sept. 15, 1997].

Other companies have been a bit bolder, building intranets for service phone representatives or adding a browser interface to existing applications. But 1998 will be the year that truly innovative, money-saving features will appear online in customer-care applications — making possible services that couldn't exist without the Internet.

Online text-based chat between customers and agents, Internet phone calls via PC and modem, even miniteleconferencing sessions are some of the options that companies will start experimenting with in the coming year.

Spiegel, Inc., a clothes and housewares cataloger in Downers Grove, Ill., has begun internal tests of a business chat application. It wants to offer interactive help on its Web site (*www.spiegel.com*). Confused user-shoppers would click on an icon to make a window pop up that lets them conduct text-based chat with sales agents.

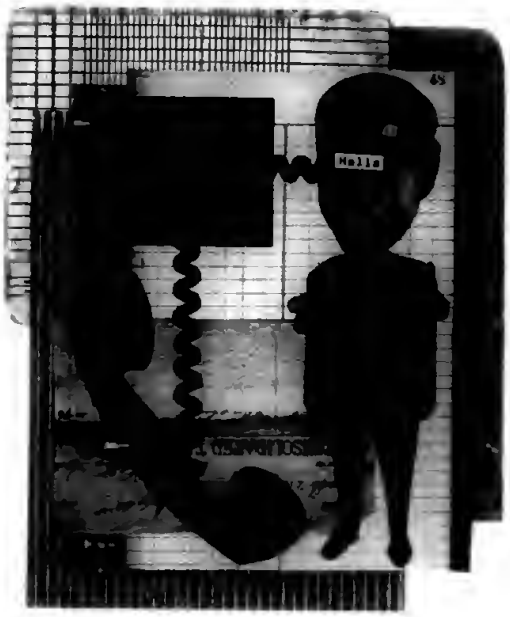
Early tests indicate that the system would be cheaper than phone service, in part because the conversations tend to be shorter, says Randy Heiple, division vice president of catalog advertising production.

Also, Spiegel wouldn't have to shell out for the per-minute charges it pays when customers use its 800 number — the chat would be part of the user's local Internet dial-up session. Heiple declined to specify projected savings.

Like social chat, business chat can create relationships — and that can translate into customer loyalty and, ultimately, more sales, says Kate Doyle, an analyst at Jupiter Communications, Inc. in New York.

Unlike E-mail, which isn't real-time, business chat lets companies pay attention to "live customer needs," Doyle says.

Chat could, for example, help online stores make sales. Today, if a shopper had a question about an item, he would fill out a Web form or type an E-mail query to the merchant. But by the time he received an answer, he might have lost the urge to purchase. Live chat would let customers and service agents converse immediately, while the desire to shop was still hot. "In 1998, you'll see a lot more [companies] experimenting" with business uses of chat products, Doyle predicts.



Another phone/Web blend on the horizon is what Forrester Research, Inc. calls "teleweb." A user would click on a button to request that a company representative call the user by phone immediately. One stock trader has piloted this technology.

The Chase Manhattan Bank Corp. isn't

Continued on page 28

ONLINE EXCLUSIVE
Forrester Research survey.
www.computerworld.com/forecast98

JARIS LLEWELYN

YOUR CUSTOMER SERVICE OPERATION IS PROBABLY AN 800 NUMBER NOW. BUT IN '98, WATCH FOR THE 'WEBOLUTION'

Calling all Customers

BY KIM S. NASH

What passes for Internet-based customer service today will be long-ago ancient a year from now.

For many companies, "automating" service has meant little more than assigning an employee to sort and reply to electronic mail sent by customers visiting a corporate World Wide Web site. The agent scrambles mainly to dredge answers from company records that may or may not be in a searchable database.

The process all but ensures that customers can get quicker, better service with a telephone call. In fact, a recent *Computerworld* examination of E-mail service at 23 big companies found that just nine responded within a day. Three sent no reply at all [CW, Sept. 15, 1997].

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Continued on page 28

ONLINE EXCLUSIVE
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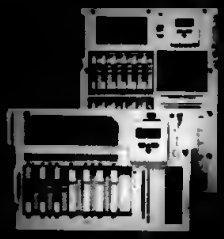
DELL

intel
inside



PAGE 25

New York

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Nov. 1 No. 4

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[illegible] Memphis

[illegible] Federal Express [illegible] Web [illegible] the company [illegible] how we [illegible] But [illegible]

The project [illegible] and federal lawmakers decide what data is OK for employees to [illegible] and what [illegible] handle only by newly [illegible] subsidiaries, says Edward Bowe [illegible] Web development [illegible] in Detroit.

We in IS haven't been given a good ruling on how to handle data from the new subsidiaries, he says. But once we do, you can bet we'll get it down.

But experts say the most universal and business-critical issue is whether customers are ready for Space Age customer service. After all, banks, which began deploying automated teller machines two decades ago, still employ human tellers. □

Nash is Computerworld's senior editor investigative report. The Internet address is knash@cw.com

SPOTLIGHT ON LEADERS

JOHN HERRON JR.

TITLE: Senior managing director

COMPANY: BT Ventures, a venture development arm of Bankers Trust New York Corp. in New York (Herron: "Not a legal entity, but not an illegal one, either").

AGE: 46

BACKGROUND: Herron received a bachelor's degree in philosophy from Hampshire College in Amherst, Mass., in 1974 and an MBA in finance and economics from the University of Chicago in 1978. He joined Bankers Trust as an analyst in 1978 and went on to head up Bankers Trust's Asia Capital Markets division (Tokyo).

He was chairman of the bank's Asset-Liability Committee in New York, co-head of the Insurance Advisory Group in New York and deputy head of Syndicate for Bankers Trust International in London. He has led BT Ventures since 1993 and is an officer of the American Portuguese Society and a trustee of the Worcester Art Museum and the Worcester Foundation for Biomedical Research, both in Massachusetts.

LAST BOOK READ: *Murdock*, by William Shawcross.

FAVORITE MOVIE: *Tokyo Story* by Yasujiro Ozu. Alternate: *It's a Mad, Mad, Mad, Mad World.*

HOW DID YOU GET OUR JOB?: "I ran our capital markets business in Asia. We had an extremely successful business, and I wanted to do something quite different.

"The technology was becoming the business, so I simply wanted to do something that was more tangible. That's when we formed BT Ventures, in 1993."

DO YOU SEE OTHER PEOPLE WITH ECLECTIC BACKGROUNDS GETTING INTO IT?: "Absolutely. Most people think it's all about technology, but the fact is, it's mostly about sociology. The human dimension is more important than the technical background, so you have to have a broader perspective on things.

"The next revolution in technology is going to be much more about focusing on this human dimension, making technology easier for people to use."

WHAT NEW DEVELOPMENTS DO YOU SEE IN IT IN 1998?: "One of the most important ones is this whole notion of making technology more intuitive, less complex for users. The whole issue of humanizing the technology is a major have as it relates to the public using [technology] much more broadly.

"There'll also be more emphasis on the linkage between sound, telephone and messaging. Sound will play a much bigger role in how we do things."

WOULD YOU LIKE TO SEE THE PERCEPTION OF THE IS DEPARTMENT CHANGE?: "IS needs to get a seat at the table. IT's going to differentiate winners and losers in the future. When and if the market slows down, the differences [among companies will be] how they manage information. Right now, we've got lots of businesses prospering. If the [economic] tide goes down a little bit, it comes down to who can operate most efficiently."

ANY FINAL THOUGHTS ON IT'S FUTURE IN CORPORATE AMERICA?: "As it relates to banks, IT will play a more pre-eminent role in distinguishing winners from losers. In the '80s, the most successful firms were those that managed volatility and globalization. Five to 10 years from now, it will be those [banks] that can manage information most effectively for their clients."

—Thomas Hoffman, *Computerworld's* senior editor, IS management (thomas_hoffman@cw.com)

CONTINUED FROM PAGE 25

doing many futuristic teleweb activities, but it has improved on the manual E-mail theme. Chase (*www.chase.com*) built a Lotus Notes database that contains canned answers to simple, frequently asked questions sent via the credit-card division's Web pages. Those pages generate more than 1,500 messages per week.

The database helps make agents' responses consistent and speeds the flow of questions and answers, says Jon Powers, vice president of network information management at Chase in New York.

KEVIN MOONEY

Spiegel's Randy Heiple is testing a business chat application that lets confused Web shoppers conduct text-based chat with sales agents.

"Customer-service people know if they see a certain question that that is Question No. 4," and they can reply with the corresponding standard response, Powers explains. Plus, the database houses an ongoing threaded history for each customer, so Chase agents can track past inquiries and, perhaps in the future, make sales pitches based on that information, he adds.

Cross-training of customer-support personnel will become a big need as those applications grow legs.

Wal-Mart Stores, Inc. in Bentonville, Ark., has done an admirable job mixing its Web site (*www.wal-mart.com*) into everyday customer support operations [CW, April 14, 1997].

For example, a "Need help?" button appears on virtually every page at the site. A click whisks users to a page that offers all manner of online services, including simple question-and-answer lists and the chance to sign up for a biweekly E-mail bulletin.

Personalization of "the online experience" will be the next step for Federal Express Corp., the grandpappy of Web-based customer service. Ideally, FedEx, which launched its do-it-yourself package-tracking site in 1994, wants to automatically generate Web pages tailored for every customer who hits the site. But reality is getting in the way.

"We have customers still dealing with pretty low bandwidth, and we need to support them" as well as clients with high-speed Internet connections, says Mike Janes, vice president of electronic commerce and logistics at FedEx in Memphis.

The company is trying out a variety of technologies to make that happen, Janes says, although he declined to be specific. So far, personalization means generating customized pricing pages for customers with FedEx contracts.

As much as some companies may want to jump into the new world of multimedia customer service, business issues may interfere.

Detroit Edison Co., for example, wants to offer completely automated self-service on its Web site (*www.detroitedison.com*). The company envisions a time when electricity customers will access accounts online and also pay bills that way. But a tangle of utility industry deregulation is clogging the works.

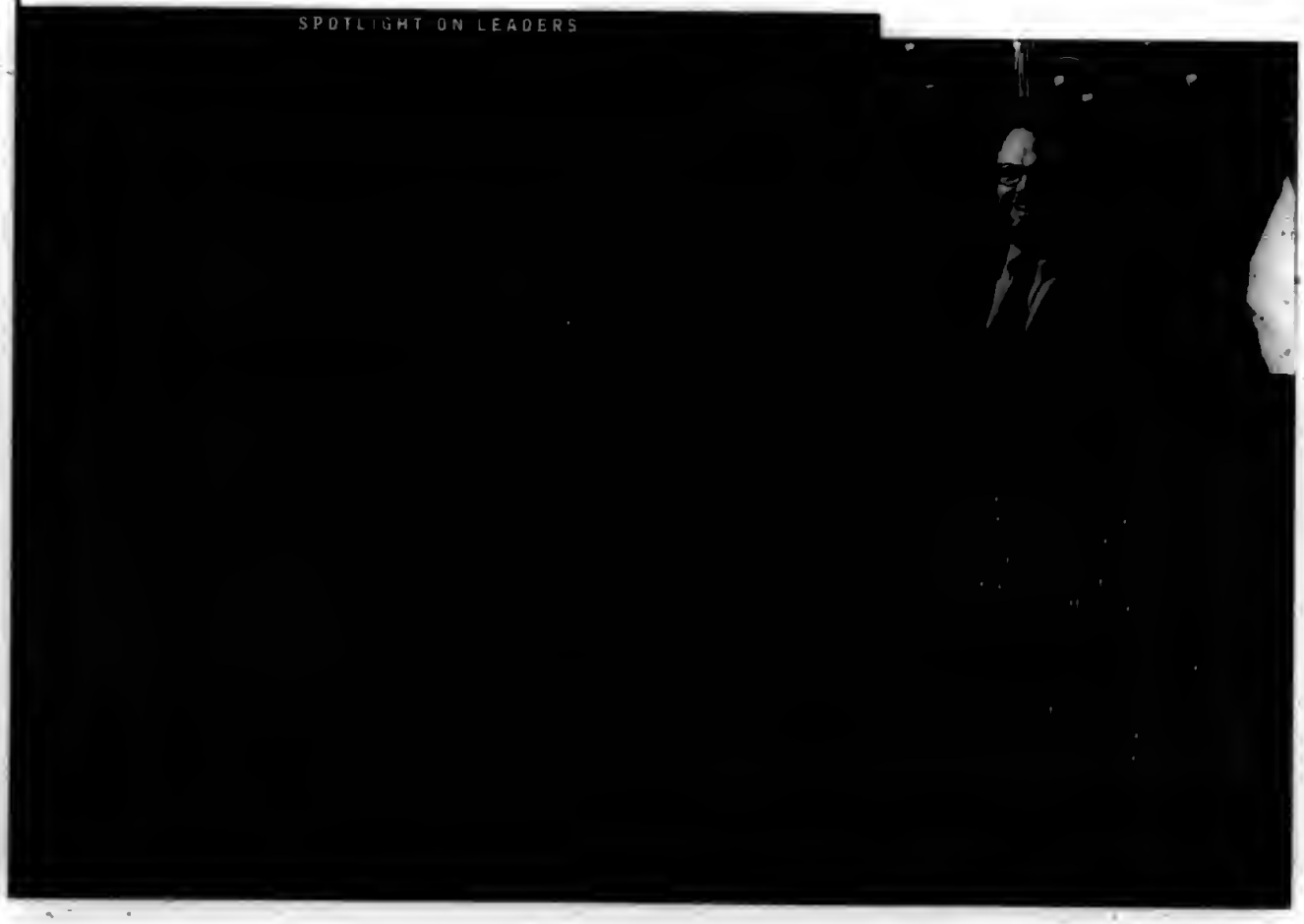
The project can't go forward until state and federal lawmakers decide which data is OK for a utility's headquarters office to manage and which can be handled only by newly spun-off subsidiaries, says Edward Boyd, a corporate Web developer at the utility in Detroit.

"We [in IS] haven't been given a good ruling on how to handle data from the [new] subsidiaries," he says. "But once we do, you can bet we'll go to town."

But experts say the most universal — and business-crucial — issue is whether customers are ready for Space Age customer service. After all, banks, which began deploying automated teller machines two decades ago, still employ human tellers. □

Nash is Computerworld's senior editor, investigative reports. Her Internet address is knash@cw.com.

SPOTLIGHT ON LEADERS



It's Payback TIME

| LABOR SHORTAGES IN A STRONG ECONOMY MEAN BIG BUCKS FOR PROGRAMMERS AND TOUGH TIMES FOR HIRING MANAGERS |

BY ULFELDER

A plump chicken fills every pot. Every programmer has a job, a bonus, a telecommuting deal and a few standing offers from systems integrators. Wall Street is asking *when* in 1998 — not *if* — the Dow Jones Industrial Average will hit 10,000.

Bummer, huh?

It is for Alice McCrory, information systems director at Blue Cross/Blue Shield of Columbia, S.C. She's got 180 jobs to fill. The insurer hits job fairs, recruits nationally in newspapers and prowls World Wide Web job sites. "We're pushing the recruiting envelope," McCrory says.

At the same time, information technology is woven deeper into the fabric of business and is used more and more aggressively in all industries.

Between 1996 and 1997, IS budgets increased by 40%, to 7.6% of company revenues, according to Computer Sciences Corp.'s annual survey on IS issues. Departments spent a third of that money on people. *Computerworld's* annual Salary Survey [CW, Sept. 1, 1997] showcased double-digit pay increases for everybody from chief information officers to data processing managers.

"In a hot market, a lot of people have a lot of demands," says John Atroba, a human resources director at American Management Systems, Inc. (AMS). The Fairfax, Va., consulting firm has 8,000 employees. Atroba says AMS plans to hire 1,000 recent college graduates and 1,000 experienced developers in 1998. IS departments will see "a lot of need and not a lot of talent. We'll see a lot of focus on retaining people," he says.

Still, candidates will be scarce, and IS contractors will be in great demand. "Any programmer with more than five years' experience was a downsizing target," notes Janet Ruhl, an author and webmaster at the Real Rate Survey (*www.javanet.com/~technion*).

Ruhl gathers and analyzes the rates that are paid to IT consultants. "Employees laid off five years ago now make twice as much money [as contractors] and enjoy it more," she says.

Don't expect sympathy for costly fees, either. Many of these freelancers expected the 30-years-and-a-gold-watch treatment right up to the day they were laid off.

New deal

Meanwhile, outsourcing will become less project-focused and more function-oriented in 1998 because of the dearth of qualified workers, some observers say.

John Larson, chief operating officer at the Eliassen Group, a high-tech staffing firm in Wakefield, Mass., foresees increased demand for systems integrator-style teams that swoop en masse into an IS shop and set up an ongoing relationship with the client.

Eliassen Group has such an agreement with a financial services institution, Larson says. The firm supplied contractors who built a Windows NT development backbone for the company and now do ongoing application development and maintenance work. Such arrangements let you add qualified workers when you need them and cut them loose when you don't.

The good news

Amid all your staffing problems, you may need to throw your chief financial officer a bone at budget time.

Try this: Point out that technology itself should get you more bang for your buck in 1998. The technology industry's leadership in selling products over the Internet (see related story, page xx), for instance, will drive hardware and software prices still lower in 1998.

MIT recently signed a $125 million, five-year deal with reseller NECX, Inc. to buy all the university's computers over the Internet. Tom Mullins, an IS director at MIT, says he expects the university's savings to be "considerable."

Yet even in the most sound economy, someone suffers. If the U.S. continues to prosper in 1998, you'll be asked to play a pivotal role in your company's business success.

Employees must be paid well, and initiatives you probably wanted to undertake five years ago when the economy was weak now need your attention.

Look at the bright side. At least your 401(k) has it good. □

Ulfelder is senior editor of Computerworld's *In Depth section. His Internet address is steve_ulfelder@cw.com.*

"We're pushing the recruiting envelope." Alice McCrory, IS director, Blue Cross/Blue Shield

ONLINE EXCLUSIVE
For a 1998 IS hiring survey, go to www.computerworld.com/forecast98.

BARRY PIERCE

THE Pressure Builds

EVERY TICK OF THE CLOCK WILL FURTHER SORT THE MILLENNIUM BUG HEROES FROM THE ALSO-RANS

BY ROBERT L. SCHEIER

This is the year a long obscure software bug will begin to reshape American business in earnest.

The bug is the now well-known year 2000 problem, in which some hardware and software can recognize only two-digit years and thus will fail because they can't tell the difference between the 20th and 21st centuries.

For the smart or lucky companies that got a head start, 1998 will be a year of stepping up the repairs and testing, badgering business partners to make sure their systems are year 2000 compliant and hoping that they don't run in to unexpected snags and that key people don't get hired away.

For the many more companies that are just now getting serious, 1998 will be a year of triage — ruthlessly deciding which systems must be fixed and which can be patched, scrapped or left for later. They'll be scrambling for computer resources and critical skills, such as Cobol and project management, in a tight market.

Systems angst

And for those businesses that haven't begun, 1998 may be a year of panic as they realize they may not be able to fix even their most critical systems on time. If they can move quickly enough and spend enough, analysts say, they stand a chance of staying in business. But other businesses that waited too long to start repairs will wind up being sold, closed or merged with other companies, analysts say.

San Diego-based Technology Management Reports says year 2000 consulting fees are already climbing to $1,500 per day, and will rise to $2,000 by late 1998 and $2,500 in 1999. With so much money going into the year 2000 problem, routine maintenance — not to mention new application development — is suffering. A *Computerworld* survey of 100 information systems managers conducted last fall showed that one out of four companies had already postponed or canceled projects because of the demands of year 2000 repairs.

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As the deadline draws closer, more companies will trust their own staffs to find, fix and test their critical systems rather than rely on outsourcers. According to the Cap Gemini survey, as of August 1997, 48% of companies planned to do their assessment in-house, compared with 38% in April. The share of companies planning to do the actual repair work in-house quadrupled from 4% in April to 16% in August.

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Scheier was formerly Computerworld's *senior editor, management.*

ONLINE EXCLUSIVE
Author Ed Yourdon hosts a discussion about the year 2000 at www.computerworld.com/forecast98

That (TELEPHONE) Line

TELECOMMUTING WILL CONTINUE ITS SURGE, CHALLENGING IS — AND MANAGERS OF ALL STRIPES — TO KEEP PACE

Merrill Lynch's Camille Manfredonia urges managers to make full use of telecommuters.

BY KIM GIRARD

When Bell Atlantic Corp. decided in 1996 to move its public relations staff into a new telecommuting/open office environment, the department learned a lesson in telecommuting math. Of the 60 workers who faced leaving their office-based comfort zone, "half the people couldn't wait," says Sharon Beadle, a company spokeswoman. The other half? "They dreaded it."

Like it or hate it, telecommuting will continue to burrow deeper into the most buttoned-down Fortune 500 companies in 1998. But with that progress, companies will struggle with new problems that have cropped up around working at home: preventing isolation or burnout, measuring telecommuter productivity and training bosses to better manage remote workers.

And on the information systems end, future challenges range from providing telecommuting equity companywide — by offering equal access to laptop computers, training and remote access capabilities — and enlisting IS to lend better technical

Continued on page 32

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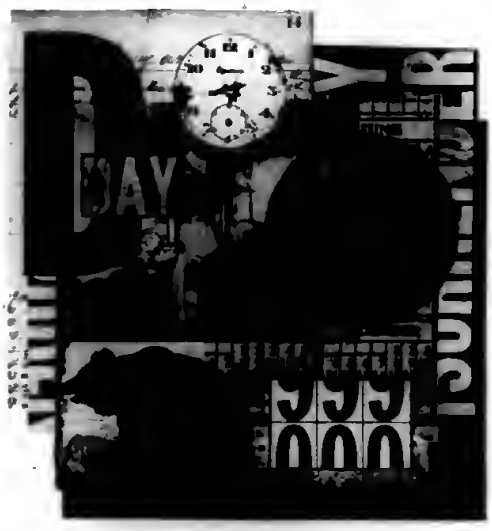
THE Pressure Builds

| EVERY TICK OF THE CLOCK WILL FURTHER SORT THE MILLENNIUM BUG HEROES FROM THE ALSO-RANS |



BY ROBERT L. SCHEIER

This is the year a long-obscure s[illegible]re bug will begin to reshape Ameri[illegible]usiness in earnest.

The bug is [illegible]now well-known year 2000 problem [illegible]which some hardware and software c[illegible]cognize only two-digit years and thus [illegible]fail because they can't tell the differe[illegible]etween the 20th and 21st centuries.

For the sma[illegible]lucky companies that got a head sta[illegible]98 will be a year of stepping up th[illegible]airs and testing, badgering busine[illegible]rtners to make sure their systems a[illegible]r 2000-compliant and hoping that they don't run in to unexpected snags and that key people don't get hired away.

For the many more companies that are just now getting serious, 1998 will be a year of triage — ruthlessly deciding which systems must be fixed and which can be patched, scrapped or left for later. They'll be scrambling for computer resources and critical skills, such as Cobol and project management, in a tight market.

Systems angst

And for those businesses that haven't begun, 1998 may be a year of panic as they realize they may not be able to fix even their most critical systems on time. If they can move quickly enough and spend enough, analysts say, they stand a chance of staying in business. But other businesses that waited too long to start repairs will wind up being sold, closed or merged with other companies, analysts say.

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JAMIS LLEWELYN

Hold That Line

(TELEPHONE)

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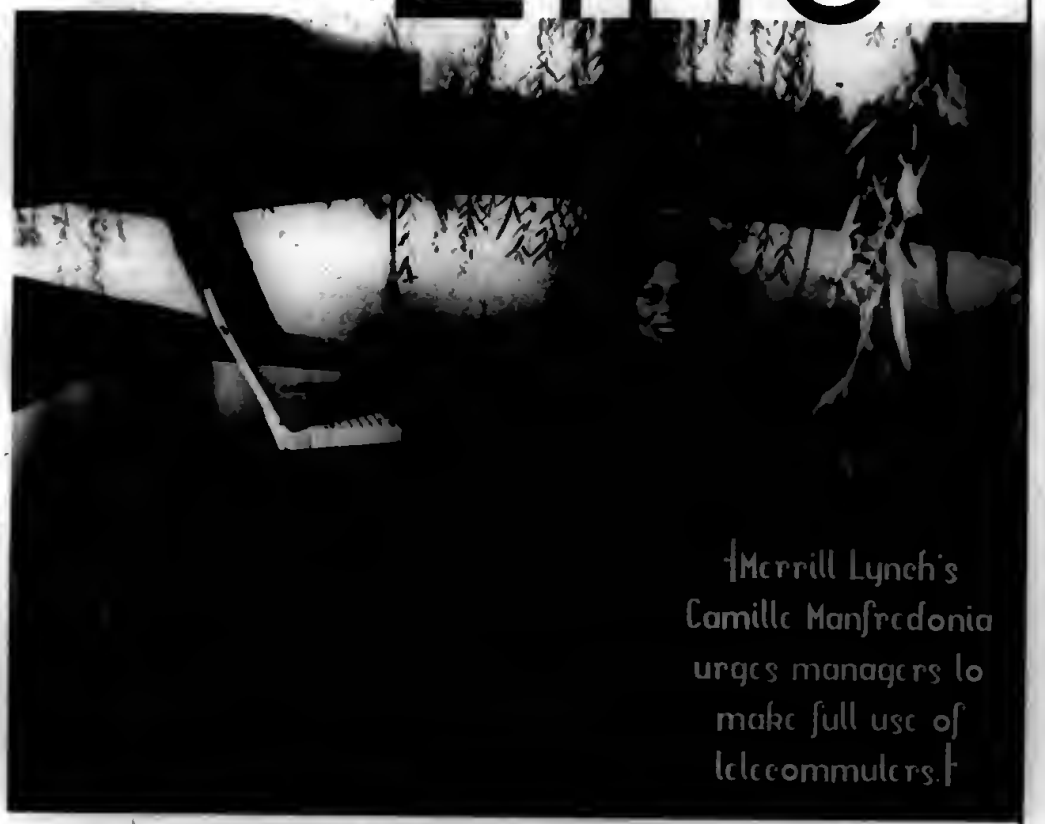

Merrill Lynch's Camille Manfredonia urges managers to make full use of telecommuters.

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Continued on page 32

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RAFAEL FUCHS

CONTINUED FROM PAGE 31

support when new departments take the plunge.

Indeed, management is taking another look at telecommuting as a way to save big bucks on real estate costs — between $1,500 and $5,000 per year per telecommuter — and to lure an increasingly demanding pool of top-flight job candidates and college graduates who demand flexible schedules.

12,800,000 people will do at least some telecommuting this year.

SOURCE SURVEY BY FIND/SVP, NEW YORK

According to statistics from New York research firm Find/SVP, about 11.1 million U.S. workers telecommute. And at least two-thirds of Fortune 500 companies employ telecommuters, analysts say.

But defining a telecommuter can be difficult. Is it the salesperson who has no office? The programmer working from home for a month because of a bad back? The public relations professional who works at home three days per week?

"It's not a question of how many people do it today," says Gil Gordon, a telecommuting consultant in Monmouth Junction, N.J. "It's how many do it over six months."

Regardless of how companies define a telecommuter, analysts say employees are working at home more than ever — after dinner and on weekends — often creating more work for IS departments.

Managing telecommuters

With alternative work arrangements growing, Gordon says, managers must learn that productivity is unrelated to how many hours an employee is physically in the office. "Employees are highly skilled at looking busy" at a desk, he says. Too many managers lag the curve — they equate productivity with skipped lunches and believe that out of sight is out of mind.

12 is the number of hours per week the typical telecommuter works from home.

SOURCE SURVEY BY FIND/SVP, NEW YORK

That problem hit home at Hughes Aircraft Corp. in Los Angeles, where telecommuting dwindled in the early 1990s as the aerospace industry was downsizing and employees became insecure about their jobs.

"People wanted to be visible, so the demand dropped," says Carol Gomez, a manager at Hughes. Gomez has recently begun to again advise managers on how to set up telecommuting programs.

Laurie Pellegrino, human resources manager at Novartis Pharmaceutical Corp., says managers at her company needed to be trained to understand how to better communicate with employees who work from home. "As soon as they didn't see [a worker in the office], they went to the next person with a project," she says. Now, managers are told to pick up the telephone and call telecommuters at home.

78% of companies do not have a telecommuting policy.

SOURCE SURVEY OF 195 HEADS OF DEPARTMENTS AT U.S. COMPANIES DONE BY FIRST MARKET RESEARCH, AUSTIN, TEXAS

The telecommuters

All telecommuters interviewed for this story — about a dozen — said they are more productive when they work from home. And by some analysts' estimates, they are getting 5% to 10% more work done than their office-bound counterparts.

"In one day at home, I accomplish what I would in two days here," says Tony Rodriguez, a project leader at Merrill Lynch & Co. who telecommutes twice a week and works online six hours per day on projects. Those projects included the department's migration from a Novell, Inc. environment to a Microsoft Corp. Windows NT environment.

Pitfalls

Although many telecommuters are content, Alice Bredin, a New York consultant and author of *The Virtual Office Survival Handbook*, says some companies are trying hard to make their telecommuters happier. Those firms are "trying to figure out how to make these people feel not isolated and not overworked," she says. Bredin says some employees feel guilty when working at home. They then work longer hours to prove themselves and end up burning out.

67% of all telecommuters are men.

SOURCE SURVEY BY FIND/SVP, NEW YORK

At Merrill Lynch's client technology division in Somerset, N.J., managers encourage telecommuters to work hours that mesh with their personal schedules. The managers also emphasize communication. They urge telecommuters to pick up the phone and call the boss, E-mail their colleagues or use videoconferencing during the workday, make sure they're on-site for department meetings or a colleague's birthday and schedule "face time" with managers and co-workers.

Managers are also told not to hesitate to call a telecommuter at home if they want something done instead of asking someone who may be less qualified but in the office that day.

"The reality is, telecommuting is not for everybody," says Camille Manfredonia, vice president of alternative work arrangements at Merrill Lynch. "That's why we have a selection process."

But at some companies, employees claim that selection processes are unfair or nonexistent. For example, a sales executive at a large telecommunications company says she wants to telecommute more than one day per week, but her boss is skeptical of her working at home. The sales executive says another similar department in the company has many more laptops and more liberal telecommuting privileges.

Sometimes, who is allowed to telecommute is perceived by workers as blind luck or simply the perk for a more aggressive or valued employee.

Like a growing number of companies, American Express Co. in New York mandates telecommuting for some employees, while making it optional for others, according to Joel Ratekin, a space planning director at American Express Real Estate Services. About 600 Amex employees telecommute, with 15,000 working remotely in some capacity, he says.

Ratekin says a cross-section of employees in the corporation are working on a telecommuting policy. To control work for the IS department, Amex and other companies ban employees from loading their own software on company-owned machines and control who has remote access to the network.

Expect a melding of voluntary and forced telecommuting programs in 1998, as well as a growing need for technical support, says Cynthia Froggatt, a New York-based telecommuting consultant. She says IS's role in making telecommuting work is vital: "All a person has to do is work at home a couple of times and not get technical support — have one or two nonproductive days — and that's it." □

Girard is Computerworld's staff writer, mobile computing. Her Internet address is kim_girard@cw.com.

Remote Control

| FIELD ACCESS TO CORPORATE DATA WILL GET SHARPER AS BANDWIDTH OPENS UP, CORPORATIONS STANDARDIZE ON DATABASE ACCESS AND APPLICATIONS GET SMARTER |

BY GORDON MAH UNG

Every remote user has been there. A [illegible] filled telephone line. A dropped [illegible]. Replicating a 2M-byte file using a [illegible]m connection.

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In 1998, industry observers say, some emerging technologies will alleviate those modem-inspired swearing sessions. Virtual private networks (VPN), Asymmetric Digital Subscriber Line (ADSL) and browser interfaces are expected to ease what traditionally has been painfully slow and buggy access to corporate data.

Just browsing, thanks

Browser-based access to corporate data isn't the future — it's now.

"We're seeing a significant move in all remote locations to adopt an Internet browser as the front end," says Kevin McManus, a partner at KPMG Consulting LLP. "It's easier to support, easier to train and there are fewer hardware configuration issues. We're deploying thousands of devices that are browser-based."

Brendan Hannigan, an analyst at Forrester Research, Inc. in Cambridge, Mass., agrees and says the real interesting applications will be the IP-based ones and browser-based access to business data.

As companies struggle to adopt browsers, the other part of the equation — secure access to the network for remote users — must be hashed out. Microsoft Corp. is pushing its Point-to-Point Tunneling Protocol for secure access to VPNs. Other secure standards in the running are Layer 2 Forwarding from San Jose, Calif.-based Cisco Systems, Inc.; the IP Security being considered by the Internet Engineering Task Force; and Layer 2 Tunneling Protocol, a mix of Microsoft's and Cisco's approaches

MARTIN JARRIE

Soon, the rack-mounted modems in the data center will be gone. Remote users instead will dial a local Internet service provider and establish a secure, private connection — or VPN connection — to the company network over the Internet

The cost benefits are obvious, experts say: They will no longer need to keep expensive leased lines or 800-numbers. But first, companies will have to decide how much security they require and whose security protocols to use. IS shops will have other issues to resolve before deploying VPNs, says Brad Baldwin, director of remote access at International Data Corp. in Mountain View, Calif.

"Do you go with the friendly neighborhood [Internet provider] on the block? Who deploys the VPN? Is this an outsource service or not?" he says.

ADSL emerges

One of the most promising emerging technologies for remote users is ADSL, which some phone companies now offer. At up to 6M bit/sec., ADSL makes Integrated Services Digital Network's speed of 128K bit/sec. seem like a stopped-up sink.

ADSL will "fundamentally change the expectation of the remote worker. I will get network access as fast remotely as I do in the office," says J. Gerry Purdy, president of market research firm Mobile Insights, Inc. in Mountain View, Calif. The catch is availability. Until ADSL is widespread, most remote users will be stuck with their alleged 56K bit/sec. modems.

Apps get smarter

They're not as sexy as digital lines and virtual networks, but applications will drive much of the need for faster communications in 1998. They will also continue to get "smarter," Purdy says. "Using caching and other mechanisms to speed up and only transferring the bits and bytes that are changing in a file makes for a much faster synchronization process."

Users also will turn to database synchronization products such as SQL Anywhere from Emeryville, Calif.-based Sybase, Inc. and SyncKit from Synchrologic, Inc. in Atlanta. Still, many users will continue to use remote-control products, such as Symantec Corp.'s PCAnywhere and Traveling Software, Inc.'s LapLink to access office PCs from the field.

They were expected to lose market share to remote-node products such as Microsoft's Windows NT Remote Access Server, but remote-control vendors are expected to thrive in 1998 as more workers go mobile.

Fred Pantaleano, director of marketing and sales information services at Progressive Insurance Co. in Mayfield, Ohio, says his firm is looking at using remote-control software for its field representatives. "We think we're going to cut down on the number of times a unit has to be returned to us," he says. But technology can't address people management, he says. Progressive's users are expected to dial 800-numbers to synchronize data. "The issue now is getting people to do that in a timely manner," he says. □

Ung is Computerworld's staff writer, PC software and application development. His Internet address is gordon_mah_ung@cwcom.

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And every information systems worker has fielded a screaming phone call from such a user. It's not pretty.

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WHAT HAPP
PC WORKSTA
WITH A GIGAB

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SMARTER, BETTER, FASTER, CHEAPER

ARE HANDHELDS READY FOR PRIME TIME?

BY **STEWART L. DECK**

After several years of warning [illegible] the wings personal information devices or PCDs [illegible] look like they're ready to take the stage as a headliner.

Several events helped pave the way for the eventful coming year: the release of the second edition of Microsoft Corp.'s Windows CE operating system; the increasing ease with which these devices synchronize with users' desktop systems; IBM signing an agreement with U.S. Robotics to sell the popular PalmPilot under an IBM brand; and new features to razz things up.

The devices hold great budgetary appeal for information systems departments. Compared with outfitting a mobile workforce with new laptops, the machines require a much smaller capital investment and significantly lower support costs — up to 75% savings over laptops, according to some estimates. "It's the convergence of price and functionality," says Rob Enderle, an analyst at Giga Information Group in Norwell, Mass. "They're becoming much more of a requirement and less of a toy."

But new devices raise new headaches. "The biggest question I hear from end users is how to support all these different kinds of devices," says Ken Dulaney, an analyst at Gartner Group Inc. in San Jose, Calif.

In 1997, Microsoft unveiled the 2.0 edition of its Windows CE operating system and pumped up its visibility with a television advertising campaign.

Analysts say Windows CE 2.0 will make 1998 a big year for mobile devices. Gerry Purdy, president of Mobile Insights Inc., a consultancy in Mountain View, Calif., says, "The combination of Windows CE 2.0, new color displays and faster processors will make this whole area very exciting in 1998."

"If you didn't see someone pull out a PalmPilot during a meeting in 1997, you will in 1998." IBM will sell the device under its own brand as the WorkPad.

Dulaney says PalmPilot has been a hit because it fills a different function. "Windows CE is really an operating system meant for a notebook," he says. "The Pilot is the different paradigm that people want for that kind of device."

Look for PalmPilot to have a color screen, more software applications and wireless capabilities (including paging) in 1998.

Plenty of new PCDs will appear on store shelves in early 1998. Microsoft's Griffin pocket PC, Texas Instruments Inc.'s Avigo and new machines from Sharp Electronics Corp. and Hewlett-Packard Co. will all help boost the market. A newcomer is the $500 GeoFox from GeoBox Inc. in Austin, Texas, that runs on Psion PLC's mobile operating system. □

Deck is an a Computerworld senior writer. His Internet address is stewart_deck@[illegible].com.

SPOTLIGHT ON LEADERS

SHERMAN WOO

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Deck is an @Computerworld senior writer. His Internet address is stewart_deck@cw.com.

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| UNCLE SAM WANTS TO LEAD THE INTERNET INTO THE 21ST CENTURY, BUT NOT EVERYONE IS APPLAUDING |

The Strain

BY GARY H. ANTHES

To see the Internet's future, look to the past.

A decade ago, the infant 'net was for universities and government laboratory researchers. There was no World Wide Web, no electronic commerce, no Java applets, no spam. The phenomenal success of the federally funded Internet propelled the 'net into the public's eye, and by the early 1990s, onto the commercial stage.

Now, the adolescent Internet is about to take another big step toward maturity. Technology that supported a few thousand graduate students and rocket scientists in 1988 can't support 25 million Internet hosts, traffic growth of 400% per year or new demands for reliability, security and usability. So, Uncle Sam is funding another round of projects in networking technology and applications, which could affect commercial Internet developments in 1998 and beyond.

Chief among them: the Next Generation Internet (NGI) program, a $100 million annual federal initiative that aims to boost the Internet's bandwidth, reliability and flexibility, while building sophisticated, distributed applications that can ride over a new and improved infrastructure. A companion, university-led effort called Internet2, has similar goals (see story, page 40).

But not everyone believes the government should underwrite and direct Internet developments, even if major technological advances to aid communications and commerce are spun off to industry. Although some government research projects have had "enormous payoffs" in the past, "its track record on anything and everything to do with *using* computers is so miserable that it's almost an embarrassment to hear them talking about doing applications," says Mike Roberts, a founder and the former director of Internet2.

Still, the NGI presses on. Its primary goals are the following:

- Develop advanced networking technologies (with openly-published specifications) for security, robustness, ease of use, quality-of-service options and management.
- Develop a high-speed, next-generation internetwork that would connect universities and federal laboratories at speeds from 100 to 1,000 times current Internet performance.
- Develop advanced distributed applications in areas such as telemedicine, digital libraries, manufacturing and defense that will employ bandwidth-hungry techniques such as full-motion video and virtual reality.

"The routing, quality of service and security demands for multicasting across thousands of networks at speeds 1,000 times faster than today's Internet require network services that are not available with current technology," says White House science adviser John Gibbons.

The Defense Advanced Research Projects Agency (DARPA), which is leading the multiagency NGI, plans by the end of 1998 to have awarded contracts for most of its $122 million three-year effort. David Tennenhouse, director of the Information Technology Office, says DARPA in 1998 will launch the "supernet" project, which will link 10 NGI sites at speeds of more than 1G bit/sec. and pave the way for 1T bit/sec. networking via wavelength division multiplexing.

DARPA also plans in 1998 to define a baseline architecture for quality of service and demonstrate negotiation of quality-of-service "contracts" over wide-area Asynchronous Transfer Mode (ATM) networks. The contracts give applications users confidence bounds on the service they can expect and the trade-offs involved.

Vinton Cerf, one of the founding fathers

for 'Net Gain

of the Internet and a senior vice president at MCI Communications Corp. in Washington, says he is looking forward to several technical milestones in 1998 that should make NGI more tangible:

- A new and much more powerful version of the Internet Protocol, called IPv6, should begin to appear in commercial products in earnest. Besides expanding the pool of available Internet addresses, it provides for robust security, multicasting, autoconfiguration, mobility, quality-of-service options and policy-based routing.
- Developers will work on protocols for applications with highly distributed databases and software — Java applets, say — that have to be controlled, synchronized, managed and made secure. "Trying to nail down the right protocols for multipoint applications is one of the biggest challenges ahead of us," Cerf says.
- Ways to transparently move traffic from the public switched voice network to the Internet will emerge. "You'll see a lot of corporate use of Internet telephony and Internet fax as a way of gaining efficiency" and lowering cost, he predicts.

Facilitating this will be ATM and IP over Synchronous Optical Network (SONET), which will become the dominant technologies for Internet backbones. For example, Cisco Systems, Inc.'s new "gigabit switch routers" will scale from 622M to 2.4G bit/sec. in 1998 and to 9.6G bit/sec. in 1999, says Richard Palmer, a marketing director at Cisco.

Cisco will also unveil several extensions to the Border Gateway Protocol in 1998 that would increase the stability and robustness of inter-router communications, Palmer says.

And anything that makes the 'net more reliable and sturdy will help ease commercial user concerns. Network "quality-of-service," in fact, is a key component of NGI and Internet2 research. The idea is to allow applications to request levels of service based on trade-offs among variables such as bandwidth, timeliness and reliability in order to get predictable performance at specified prices. For example, Internet telephony might require immediate delivery of data packets but tolerate some data loss, whereas a software transfer might require 100% accuracy but accept some delay.

Service-quality options are a radical departure from today's "best efforts" approach in which users cast data packets into the void and hope they'll get delivered eventually. "If you have an application that's providing real-time, interactive video, and it's competing with 7,000 undergraduates looking at the *Playboy* page, you've got to make sure the stuff that's making you money is actually going through," says Scott Bradner, senior technical consultant at Harvard University and a member of the Internet2 technical committee.

Members of the Society for Information Management are "very much in favor" of the service-quality initiatives, even though they may mean higher charges for some services, says Ray Hoving, vice president for issues advocacy. "We knew that the Internet wasn't going to come for free for very long," he says. "But this must be done in a fair, businesslike way in a highly competitive environment."

Gartner Group, Inc. in Stamford, Conn., predicts that half of all Internet service providers will offer quality-of-service guarantees for traffic within their own networks by the end of 1998.

Performance guarantees across different Internet providers will evolve from metrics developed by industry-specific groups of users, says John Curran, chief technical officer at GTE Internetworking in Cambridge, Mass. For example, he says, the Automotive Industry Action Group — a consortium of automakers and suppliers — is certifying 'net providers for adherence to standards in security, reliability and throughput among other things.

Curran says more such industry groups will emerge this year, and "in two or three years, you'll see a set of specs for business-

Continued on page 40

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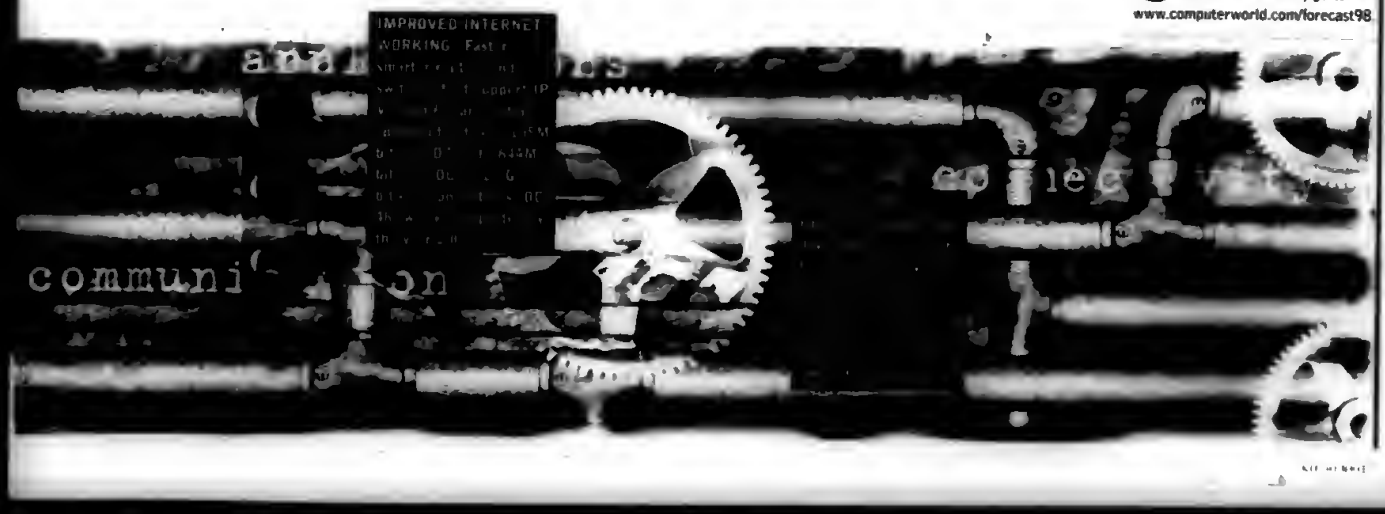

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THE NEXT GENERATION INTERNET PROJECT INCLUDES WORK IN THE FOLLOWING AREAS

FATTER PIPES SONET (fiber optic backbones) will support transmission speeds of up to 51.8M bit/sec

for 'Net

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Continued on page 40

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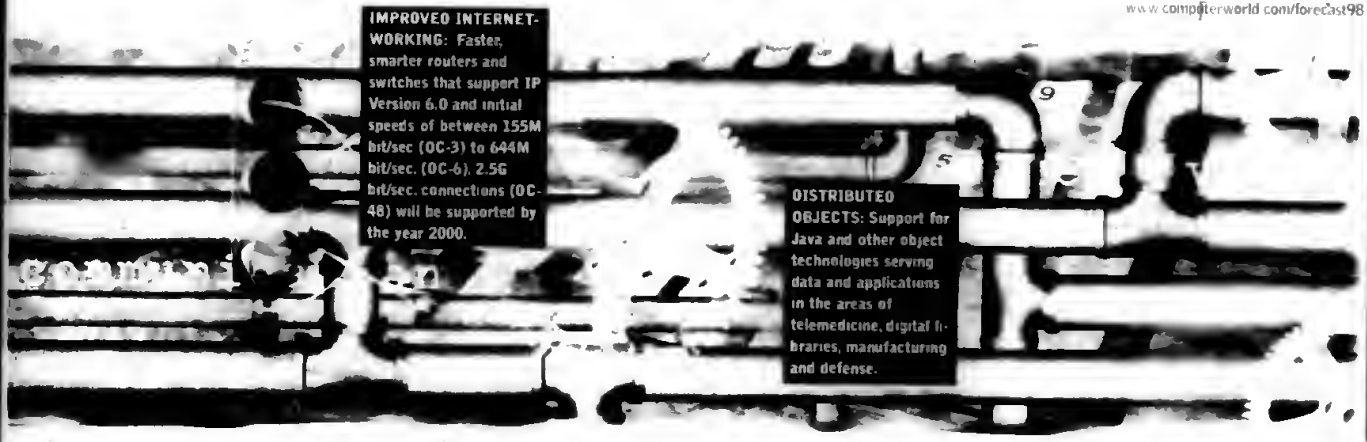

IMPROVED INTERNETWORKING: Faster, smarter routers and switches that support IP Version 6.0 and initial speeds of between 155M bit/sec (OC-3) to 644M bit/sec. (OC-6). 2.5G bit/sec. connections (OC-48) will be supported by the year 2000.

DISTRIBUTED OBJECTS: Support for Java and other object technologies serving data and applications in the areas of telemedicine, digital libraries, manufacturing and defense.

Government Internet2

Internet pioneers fondly remember when government and academic researchers had Arpanet all to themselves. In the future, they may have all the bandwidth they need, free from the net congestion caused by gawkers, gamers and — worst of all — consumers, once a university-sponsored project to develop an Internet fast lane for researchers opens up.

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Continued from page 1. PAGE 39

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In 1998, the transfer of traffic from the public telephone network to the net will invite the scrutiny of federal regulators who have until now not touched the Internet. Budnet warns. "It's going to be a wrenching thing when they start putting regulations, taxes, universal access charges, line fees and all that on the data service," he says. "I fully expect it to happen, but use regulators don't like to see revenue streams go down."

There is broad support in the Internet community for government funding of research in open, "precompetitive" technologies — basic building blocks that can be shared by all users and vendors. But there is less enthusiasm for spending taxpayer dollars on specific applications — about 15% of NGI's budget.

As to the charge that the government shouldn't spend money on things the private sector would do anyway — and do better — NGI supporters insist the program will concentrate on areas industry sees is too risky or too unlikely to produce short-term profits.

For example, it needs to figure out how to ensure manageability, reliability and security in the highly distributed systems likely to be spawned by Java, Cerf says. "That's extremely risky and in many ways unknown territory, so government support is vital because industry is less likely to make investments in it."

Adds Cerf: "The Internet would not have happened in the way it did without government support for an awfully long time — pretty solid support for 20 years." □

Anthes is Computerworld's senior editor, special reports. His Internet address is gary_anthes@cw.com.

SPOTLIGHT ON LEADERS

TERRELL JONES

Dick Kerr

TITLES: [illegible] The Sabre Group president, Sears [illegible]

AGE: [illegible]

BACKGROUND: [illegible] receiving a bachelor of arts [illegible] from Denison University in Granville, Ohio, in 1979. From 1972 to 1976, he was vice president of a travel company that specialized in business travel to Eastern Europe and the former Soviet Union. He was vice president of sales, then development, at a start-up software company that sold accounting software to travel agents. American Airlines bought that company in 1986. It is now known as Agency Management, part of the Sabre Group.

LAST BOOK READ: [illegible] Think by Hugh McKinnon, [illegible]

FAVORITE MOVIE: [illegible] English Patient

HOW DID YOU GET INTO IT? "I get little offbeats [illegible] I was [illegible] I sponsored reservations and accounting groups at the company because they were more interesting and more fun than travel."

DO YOU SEE OTHER PEOPLE WITH ECLECTIC BACKGROUNDS GETTING INTO IT? "More than [illegible] — the more people who have broad backgrounds — are getting into IT. It isn't just for dweebs anymore. World Wide Web commerce is business, technology, marketing and publishing. If you don't have a broad background, you won't make it."

WHAT NEW DEVELOPMENTS DO YOU SEE IN IT FOR 1998? "The Internet can really help IT solve business problems at the speed that business requires. Therefore, personally, I am [illegible] the potential of network computers, allow us to flank the desktop [illegible], and bring some productivity programs to the business [illegible]."

WOULD YOU LIKE TO SEE THE PERCEPTION OF IS DEPARTMENTS CHANGE? "It's always [illegible] to convince people that you are delivering low cost and high quality. Since we never build anything twice, it's tough to be appreciated. And today everyone is an IT expert, since they have a PC at home and do their stock. On the other hand, as we continue to deliver products that really affect the bottom line, the perception will change by itself."

ANY FINAL THOUGHTS ON IT'S FUTURE IN CORPORATE AMERICA? "I think more and more companies will buy packaged products for their core [illegible], freeing scarce software talent to concentrate on true value-add solutions."

— Rick Sala (Computerworld's senior editor, managing Vick_sala@cw.com)

rise

Order-taking/ supply-side

BY MARY BRANDEL

Adaptec Inc. is like many early adopters of electronic commerce — it plans in 1998 to graft pockets of Internet-driven business activity into a coherent enterprise strategy.

The Milpitas, Calif., maker of computer peripherals adapters already sells its products to consumers via an electronic catalog. And it sends purchase orders and assembly diagrams, extracted from SAP R/3, to suppliers' systems over the Internet.

But right now, the front end isn't tied to SAP or internal applications, says Steve Robinson, Adaptec's electronic-commerce manager. "Our objective for next year is to integrate our order-taking capabilities with the supply side to come up with a strategy for the whole company to do electronic commerce primarily using the Internet."

Hooking up electronic-commerce servers to existing enterprise resource planning systems is among the most powerful electronic buying-and-selling initiatives organizations can undertake in 1998, says Vernon Keenan, a director at Zona Research, Inc. in Redwood City, Calif. "It enables activity from the Internet to ripple into your basic business operations," Keenan says.

Adaptec isn't sure of the technologies it will use; Keenan sees more products rolling out in 1998 from the likes of SAP AG, PeopleSoft, Inc., The Baan Co. and Oracle Corp. to more tightly tie commerce to transactions systems. But Robinson is sure of the expected benefits. "By capturing the sales up front from the consumer base, it will help reduce cycle times on the supplier side. And for customers, it will be more responsive," he says.

Beyond improving customer responsiveness, Adaptec, like many pioneers, is retroactively creating a corporate electronic-commerce strategy. Electronic commerce snuck up on the company, infiltrating department by department. Now, Robinson says, "we need to circle the wagons — take a step back, see what we've got in place and create a corporate solution."

Doing so is vitally important, one analyst said. "We suggest that companies without an enterprisewide commerce strategy together by the end of 1998 will be the least competitive companies in their markets through the next five years," says Bruce Guptill, electronic-commerce director at Gartner Group Inc. in Stamford, Conn.

Procurement takes off

But if you're going to focus on a single function, the place to start just may be procurement. With the average purchase order costing at least $75 to process, automation in the purchasing department is a no-brainer. That means more interest in systems such as those from Elekom Corp. and Commerce One, Inc., which digitize the purchasing process from approvals through order execution, says Erica Rugullies, an analyst at Giga Information Group in Cambridge, Mass.

The trend toward World Wide Web-based procurement has lit a fire under companies such as Avery Dennison Office Products in Diamond Bar, Calif. "There will be a fundamental shift in how consumers purchase our product," says Mark Hatch, director of marketing and business development at the company. "They'll buy office products from the computer screen, not catalogs."

But that doesn't mean Avery Dennison is going to build a direct-to-consumer Web site. Instead, "we've determined that [links with the retailer] are where the real excitement is," Hatch says. "We've got an enormous opportunity to take costs out of the way we deal with the trade and enable consumers to get more information and a broader offering than ever before."

Hatch likened the new relationship to "EDI on steroids. The [retailers] will build their own catalogs, and the buyer can manage their own spending levels and budgets. The linkages need to be robust, real-time, with perhaps video attached to them." Next year, he says, will be the start of building those relationships and links. "We'll be watching [supplier-to-buyer] pilots and will pick and choose some to participate in," Hatch says.

He'll also scrutinize the Open Buying on the Internet (OBI) standard, a specification for making Web procurement more consistent among buyers and suppliers. It's an enormously complex undertaking. "We have problems figuring out what a 'buy' is, a case is internally, and [the OBI consortium] is trying to do it across industry segments," Hatch says.

But there's no need for tears. There's still conventional electronic data interchange (EDI). In 1997, all the traditional EDI software suppliers and value-added networks announced their IP-based offerings, and many companies are looking at adopting them. Next year, IP-based EDI is expected to "take off like wildfire," Rugullies says. "The benefits are huge. You can expand your base of trading partners at very little cost," she says.

Customized sites

Meanwhile, better-targeted commerce sites that incorporate documented customer needs should begin to emerge. In some cases, companies will customize the Web experience, based on the type of visitor. Adaptec, for example, will relaunch its consumer site next year. "We will create separate Web pages based on specific customer segments," Robinson says. Today, the site uses the same front end for OEMs, resellers, distributors and consumers.

ProShop.com in Fort Myers, Fla., will go one step further. It uses a Common Gateway Interface-based form on its site to gather demographic information and compile that into a database. There, it is analyzed, both manually and using a log analyzer from Web Trends, says Will Pringle, founder of the site. Using that information, ProShop.com will be better able to meet its 1998 goal of providing more value-added information about golf.

ProShop.com customers will also be able to configure golf equipment on the fly next year, thanks to more dynamic catalog software that ProShop.com built in-house. "We took a static site, which was 300 pages, and turned it into a site with 6,000 to 10,000 dynamic pages," Pringle explains. The company plans to sell the software commercially in 1998. □

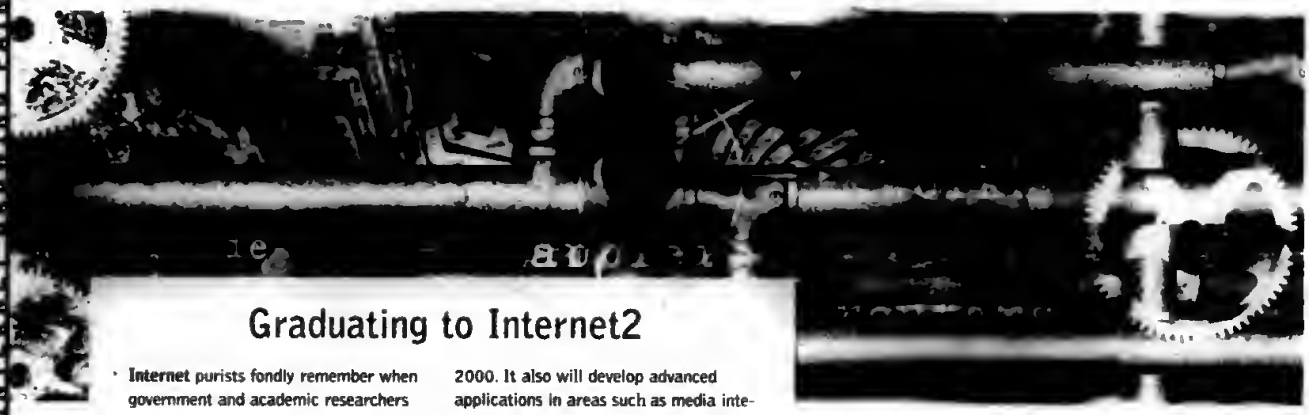
Brandel is executive editor of the Computerworld Magazines Group. Her Internet address is mary_brandel@cw.com

IN 1998, COMPANIES SHOULD FOCUS ON CREATING CORPORATEWIDE ELECTRONIC-COMMERCE STRATEGIES, NOT PIECEMEAL APPROACHES

ONLINE EXCLUSIVE

For what 1998 has in store for software suppliers, Internet service providers and middlemen, go to www.computerworld.com/forecast98

For statistics, see "Commerce by Numbers" at computerworld.com/emmerce



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WILLIAM MERCER MCLEOD

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Doing so is vitally important, one analyst said. "We suggest that companies without an enterprisewide commerce strategy together by the end of 1998 will be the least competitive companies in their markets through the next five years," says Bruce Guptill, electronic-commerce director at Gartner Group, Inc. in Stamford, Conn.

Procurement takes off

But if you're going to focus on a single function, the place to start just may be procurement. With the average purchase order costing at least $75 to process, automation in the purchasing department is a no-brainer. That means more interest in systems such as those from Elekom Corp. and Commerce One, Inc., which digitize the purchasing process from approvals through order execution, says Erica Rugullies, an analyst at Giga Information Group in Cambridge, Mass.

The trend toward World Wide Web-based procurement has lit a fire under companies such as Avery Dennison Office Products in Diamond Bar, Calif. "There will be a fundamental shift in how consumers purchase our product," says Mark Hatch, director of marketing and business development at the company. "They'll buy office products from the computer screen, not catalogs."

But that doesn't mean Avery Dennison is going to build a direct-to-consumer Web site. Instead, "we've determined that [links with the retailer] are where the real excitement is," Hatch says. "We've got an enormous opportunity to take costs out of the way we deal with the trade and enable consumers to get more information and a broader offering than ever before."

Hatch likened the new relationship to "EDI on steroids. The [retailers] will build their own catalogs, and the buyer can manage their own spending levels and budgets. The linkages need to be robust, real-time, with perhaps video attached to them." Next year, he says, will be the start of building those relationships and links. "We'll be watching [supplier-to-buyer] pilots and will pick and choose some to participate in," Hatch says.

He'll also scrutinize the Open Buying on the Internet (OBI) standard, a specification for making Web procurement more consistent among buyers and suppliers. It's an enormously complex undertaking. "We have problems figuring out what a 'box' vs. a 'case' is internally, and [the OBI consortium] is trying to do it across industry segments," Hatch says.

But there's no need for tears. There's still conventional electronic data interchange (EDI). In 1997, all the traditional EDI software suppliers and value-added networks announced their IP-based offerings, and many companies are looking at adopting them. Next year, IP-based EDI is expected to "take off like wildfire," Rugullies says. "The benefits are huge. You can expand your base of trading partners at very little cost," she says.

Customized sites

Meanwhile, better-targeted commerce sites that incorporate documented customer needs should begin to emerge. In some cases, companies will customize the Web experience, based on the type of visitor. Adaptec, for example, will relaunch its consumer site next year. "We will create separate Web pages based on specific customer segments," Robinson says. Today, the site uses the same front end for OEMs, resellers, distributors and consumers.

ProShop.com in Fort Myers, Fla., will go one step further. It uses a Common Gateway Interface-based form on its site to gather demographic information and compile that into a database. There, it is analyzed, both manually and using a log analyzer from Web Trends, says Will Pringle, founder of the site. Using that information, ProShop.com will be better able to meet its 1998 goal of providing more value-added information about golf.

ProShop.com customers will also be able to configure golf equipment on the fly next year, thanks to more dynamic catalog software that ProShop.com built in-house. "We took a static site, which was 300 pages, and turned it into a site with 6,000 to 10,000 dynamic pages," Pringle explains. The company plans to sell the software commercially in 1998. □

Brandel is executive editor of the Computerworld Magazines Group. Her Internet address is mary_brandel@cw.com.

IN 1998, COMPANIES SHOULD FOCUS ON CREATING CORPORATEWIDE ELECTRONIC-COMMERCE STRATEGIES, NOT PIECEMEAL APPROACHES

ONLINE EXCLUSIVE
For what 1998 has in store for software suppliers, Internet service providers and middlemen, go to www.computerworld.com/forecast98. For statistics, see "Commerce by Numbers" at computerworld.com/emmerce.

SAFETY IN NUMBERS?

FORTIFIED SECURITY SPECS, POLICIES SHOULD ENGENDER WEB TRUST

BY SHARON MACHLIS

JANE FENOLIO

The Internet should see new security protocols deployed in 1998 as companies try to entice consumers and corporate users onto the World Wide Web with assurances that their transactions will be safe.

For example, the Secure Electronic Transfer (SET) developed by several major financial institutions and computer concerns to safeguard credit card numbers is expected to emerge in 1998 after a prolonged germination period.

SET encrypts data and manages transactions without giving merchants any actual card numbers. So these numbers aren't vulnerable on a vendor's server.

SET 1.0 implementation tools became available in October. With support from big banks, credit card companies and IBM, the average consumer will see it on the Web next year, predicts Philip Carden, a managing consultant at The Registry Inc. in Hoboken, N.J. SET 2.0, which will feature more flexibility in encryption algorithms, also is likely to be rolled out in earnest in 1998.

But there are still ongoing performance problems with SET that will need to be addressed, said Ted Julian, an analyst at International Data Corp. in Framingham, Mass. "There is increased activity, such as several encrypted key exchanges, in order to complete a SET transaction."

Consumer unease over sending credit-card data over the Internet has blocked some Web purchasing. "The World Wide Web does not have consumer trust," said James Miller, technology and society domain leader at the World Wide Web Consortium (www.w3.org), a group that develops Web protocols.

But for some companies, a combination of existing and upcoming protocols is enough to conduct business on the Web. "SSL [Secure Sockets Layer] and SET make things pretty comfortable," said Laura Longmore, marketing systems manager at Boise Cascade Office Products Co. in Itasca, Ill.

Authenticating users is another Web sticking point, as the Social Security Administration discovered when it attempted to post personalized financial data on its site. Protests erupted over fears crackers could too easily tap in to people's earnings data.

Digital certificates may help, and some analysts expect them to move into widespread use in 1998. Companies are likely to start by managing their own certificates internally — a necessary step to authenticate employees who deal with business partners over secure Internet links, Carden said.

Reliance on such certificates for consumers raises issues of who will issue and revoke them and whether there will be standards. The Internet Software Consortium meanwhile hopes 1998 will be the year a major infrastructure weakness will be improved by adding digital certificates. The consortium believes donated digital certificate software from RSA Data Security Inc. will be widely used across the Internet by the end of 1998 to protect the domain name system.

As the Internet becomes more popular, it is likely to attract more troublemakers seeking to steal data, deface Web sites or simply cause mischief. That perception continues to haunt users. "We currently don't exchange sensitive information with our customers over the Internet," says Paul Gaffney, senior vice president of systems development at Office Depot Inc. in Delray Beach, Calif. □

Machlis is Computerworld's senior writer, electronic commerce. Her Internet address is sharon_machlis@cw.com.

SPOTLIGHT ON LEADERS

MORGAN BARLOW

Grappling WITH e.Knowledge

BY GIDEON GARTNER

Results from this year's [illegible]op issues on the minds of [illegible]anag[illegible]ere unusually dispersed. [illegible]esting [illegible] change in the landscape [illegible]currin[illegible]e at Giga Information [illegible]p keep [illegible]wn list, based on feed[illegible]and inqu[illegible] from our clients [illegible] Interne[illegible] our list because it's [illegible]est end[illegible] of centralized information technology. The critical shortage of IT skills is there because without appropriate resources, the information systems role will restructure. The increased power and concentration at the top of the vendor heap, which together with an exploding bottom comes at the expense of a wounded middle, reflects a need to seek prefab architectures and cross-product integration solutions. This will concede power to the top-tier suppliers and further weaken the IS organization.

The year 2000 and the European monetary unit are also concerns, but ephemeral ones. The need to improve IT awareness in the president's office is coming on strong, but is the president sufficiently IT-aware to be frustrated with the lack of accessible decision-support data? Enter knowledge management as a key issue.

Knowledge management's ascension

If the economist's three phases of growth are preconditions, take-off and maturity, then we are ready for knowledge management's take-off. After all, every executive today suffers from information anxiety. And, there is growing institutional recognition of knowledge management, for example, the title of chief knowledge officer, knowledge management vision statements and advances in data warehousing that plan for later intelligent use of information. We're already using knowledge management components, such as groupware, electronic mail, search and agents, and discussion forums. Also, intranet deployment is shifting toward interactive applications, which are required to support knowledge management solutions.

This need for much better knowledge management tools will soon become critical. Anxiety is still worsening because even if available information has been growing at a steady exponential rate, then the phenomenon of compound growth has made the absolute volume of information staggering (relative to our somewhat fixed capacity to absorb it). This information glut creates overload that is debilitating, crowding out our ability to think and causing stress. But for information providers, the glut has become hugely profitable as intermediaries such as specialized magazines, media channels, think tanks and information services have proliferated. Of course, this just exacerbates the glut, creating enormous redundancies. Conflicts among narrow specialists with parochial views confuse consumers. And worse, blatant misinformation is rife; analysis today is broadly suspect, even from traditionally important sources.

The range of knowledge management solutions to these problems will depend on technology. Very sophisticated retrieval engines will continue to be built that exceed today's search standards for "recall" and "precision." In addition, solutions to the glut problem must employ technology to abstract (or highlight) and synthesize multiple hits from searches. When one adds various administrative functions such as permissioning and security, a "knowledge server" concept emerges. The organizations that exploit technology effectively may be considered "e.knowledge" participants. e.knowledge is the application of electronic technologies to the creation, classification, synthesis, analysis, storage, retrieval and display of knowledge.

But electronically processing knowledge still won't do the whole job. People are needed to certify and calibrate the sources, add value through analysis and make recommendations that are customized to the consumer's environment, as help desks do today. Conduits to various common-interest communities must be provided, and facilities for the consumer to query the experts will often be included.

The value proposition

Whether sold commercially or distributed internally, knowledge will have to be priced. In fact, we are now witnessing the beginning of pricing level rationalization in knowledge management. Here's how it may continue to evolve. The difference between information and knowledge is assumed to be a discontinuity between the value of each; knowledge is usually decision-relevant and therefore carries more identifiable value. So when we certify a unit of information as "knowledge," we can estimate its average value, usually through some informal negotiation between supplier and consumer. Just as in the hardware segment of our industry, there exists inherently some "positive price-elasticity" of demand from period to period, when price per unit of knowledge goes down, then utilization of these lower price units goes way up, resulting in some reasonable increase in total price. And, everyone is happy.

At least that's the theory. Today, with virtually nobody exercising the discipline of measuring value, prices per unit of knowledge can actually increase from period to period. Luckily, for organizations sensitive to the value issue, there is hope: Between the Internet and new models that assure that prices per unit will decrease, the value outlook is positive. □

| NEW TOOLS AND EXPERTISE MAY CUT INFORMATION GLUT; DISSECTING THE VALUE OF KNOWLEDGE IS CRITICAL |

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BRIAN SMALE

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Grappling WITH e.Knowledge

BY GIDEON GARTNER

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BRIAN SMALE

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OPINION

Ringside seat "Where does *Computerworld* want to be on New Year's Eve 1999?"

That's the question our assistant sections editor, Mike Goldberg, asked himself one night while driving home from another long day at the office. Like any good technology journalist, Mike figured the ideal place to be when the clocks tick over to 1/1/00 is at ground zero for mission-critical systems: the data center.

But how to secure such a ringside seat at the Millennium Moment? The answer is *Computerworld's* Year 2000 Chronicles, which makes its debut next week on our front page.

A half-dozen prominent companies have graciously agreed to allow a handful of our reporters deep inside their year 2000 projects. Throughout 1998 and 1999, we will follow the ups and downs of century date-change conversions at Merrill Lynch, Atlantic Energy, Nabisco, Union-Pacific Corp., C. R. Bard and the Canadian Imperial Bank of Commerce.

The IT leaders represented in this first batch of articles are already making it abundantly clear how dearly they value their dedicated teams of year 2000 staffers. Even at the largest operations, such as Merrill Lynch and Union Pacific, there is an impressively fierce attitude about keeping the "wolves" (i.e., the corporate raiders) away from their year 2000 people.

Every few months — or more often if news breaks — we will bring you updates from these companies. Some of the stories will focus on the technology and the products being used to fix code and test systems. Some of them will be about the people, the politics and the pain behind these vastly important yet highly unpopular projects. All of them, we hope, will be unique, compelling and honest stories about the impact of the year 2000 on these businesses.

With the Year 2000 Chronicles, we've reserved our ringside seat at the biggest IT bash of all time. We hope you'll join us.

Maryfran Johnson, *executive editor*
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LETTERS

Best way to enforce quality

In Computerworld's article on quality ["Quality?! What's that?" CW, Oct. 13], it's great to see companies acknowledge that they could chop their budgets "by 20% to 30% through readily achievable quality improvements." I couldn't believe, though, that the same old approach is being blamed for why quality's not happening! You can't just tell IS staff they have to follow quality standards. The only way to enforce quality is to tie quality assurance tools and automated standards to the change process, so the analyzers, metrics tools, change impact and compare utilities, and so on, just appear when they're needed, without any hassle.

> You can't just tell IS staff they have to follow quality standards

Christina McGill
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Not all CIOs forced to leave

In his column "The price of uncertain leadership" [CW, Nov. 10], Paul Strassmann seems to imply that all the CIOs who left their previous employer were forced to leave. I'm sure some were, but there may be a more balanced explanation. For example, the award-winning CIOs he mentions may have been lured away by more money and bigger responsibilities.

Then there is the musical chairs effect of one change in the elite group he is discussing: One CIO is fired and replaced by another CIO enticed from a different company. This effect is aggravated by the dearth of middle managers available for promotion in most companies these days, since the middle managers were the first to go in this decade's layoffs. The only way to know what the statistics mean is to poll the CIOs involved.

Regardless, it's still a bad thing that there is so much turnover in this position. Implementing large systems projects requires consistent leadership over years of effort. If the companies in his survey are doing anything meaningful in systems, losing the top person has to hurt, even if that person is replaced by another who is equally qualified.

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Java article misses points

Computerworld's recent articles on Java native code compilers are missing two key points. The first: The same Java source can be compiled to Java byte code. Installing a native code compiler doesn't make your source code non-cross-platform.

The second is that a native code compiler that compiles byte code means you can not only compile programs so they run faster, but you can also ship your byte code to other platforms where it can be run by a Java Virtual Machine or compiled on that platform to run faster. There was no corollary in C. You either shipped an executable or you shipped the source code.

In Java, you can ship the byte code. Rather than bashing native code compilers in general, perhaps you should promote byte code compilers over source code compilers. That would let you have your cross-platform cake and eat it faster, too.

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Hey, quit your bellyachin'!

After reading your "Inside Lines" blurb [CW, Nov. 10] about Sun CEO Scott McNealy inciting his keynote audience in Berlin to flood Bill Gates with E-mail demanding the purity of Java, I finally realized why it is that Microsoft continues to dominate. Microsoft's competitors spend so much time whining and so much money suing that they have no resources left for R&D, hard work and good marketing. Is this the best McNealy can do? At least Gates, et al, spend their own money making money. McNealy wants his customers to spend their time and money taking Gates down.

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Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Titles and departments we could do without

Michael Gentle

Ever wonder why it is that when you choose software product ABC for your local organization, you're just a project manager working in the IS department, but if you do the very same job on an international scale, you're suddenly the Director of Transnational Systems in the Department for Global Technology Deployment and Systems Optimization!

Here are some tongue-in-cheek examples of outrageous job titles and departments that make us hark back to the good old days when the longest job title was "Director of Operations."

Virtually Integrated Planning Council: runs the whole shooting match.

Strategic "anything" Director: a politically acceptable staging post for executives with no real work to do, or for those whose posts have been rationalized following the last round of company restructuring.

Director of X-wide Systems: a person whose mandate it is to put in as many "standard" systems as possible in geographical area X, whether or not they have a business case or actually correspond to country requirements.

Infrastructure and Planning Department: what you call an infrastructure department to ensure credibility and an annual budget.

Global "anything" Department: a group whose mandate is unclear and whose existence is more or less ignored by subsidiaries around the world.

Global Products and Technology Department: a body of technical weenies whose job it is to spend vast amounts of time and money defining "strategic" technical standards from a market of "me-too" products. Their toughest mission to date? Picking Navigator or Explorer as the worldwide browser standard.

Virtually Integrated Planning Council: runs the whole shooting match. Staffed by dignified 50-something execs with awesome-sounding titles, this body inspires security, confidence and vision. It can get the CEO to write million-dollar checks for strategic projects without batting an eyelid. Known in inner circles as the Very Important Planning Council.

Macro Business and Management Analyst: IS's concession to user representation. Usually an ex-user whose ability with technology personifies the saying "a little knowledge is a dangerous thing." Work procedures known in inner circles as Management by Magazine Article.

Area/Regional: options available for "line extension" to existing director positions when the market for such posts is saturated. Instructions for use: Simply append level identifier to original title, as in "Area Director for ..."

Director of Enterprise Process Strategy: a new post created when all line extension options have been exhausted (see above), and a company can no longer create any more Strategic Director positions without raising suspicion.

VP for Global Best Practices: head of a department that unilaterally decides which practices are "best" for subsidiaries without their consent and without identifying any "worst" practices.

VP for Technology Deployment and Systems Optimization: post reserved for someone who can work the words "strategy," "process" and "architecture" into the same sentence and manage to keep a straight face.

Strategic Director of Advanced Technology: head of a department of one. Post reserved since the dawn of computing for nerds with beards who are best left alone to explore solutions-in-search-of-a-problem.

IS Project Manager: what type of a job title is that? Somebody get that weirdo outta here! □

Gentle is a project manager at a telecommunications company in Paris.

What will it cost to bury your PC?

John Gantz

Where do old PCs go when they die? I have taken more than one to the dump. But what about the millions of commercial PCs that become obsolete each year?

Research from International Data Corp. reveals that less than 15% of the 10 million or so corporate PCs retired this year will be thrown away. On the other hand, only a little more than 15% will be traded in for new equipment or sold on the open market.

Guess what? U.S. companies are losing *billions* by taking a casual attitude toward PC disposal. Getting rid of PCs is more expensive than most companies realize. The methods you think would be most economical aren't.

Consider five common methods of getting rid of a PC: (1) throwing it away; (2) selling it to a used equipment dealer; (3) selling it to an employee; (4) donating it to charity; and (5) giving it to another employee.

Guess which costs the most? No, it's not throwing it away. It's giving it to another employee!

You might get $200 for a PC from a used equipment broker, but it can cost $400 to give the PC to another employee. Removing old stuff from the first employee, testing and preparing the system for the new employee and physically carting the PC around make up half the cost. Reinstalling software and customizing the system for the new user take up the other half.

You might think a usable PC for $400 is a good deal, but chances are it will need an upgrade to run today's applications and will generate a bunch of help desk calls from its new location. With the average cost of a PC (not counting capital costs) $4,500 per year, an old $400 computer can cost you a lot more than a new $3,000 one over a three-year life cycle.

Giving a computer to charity is almost as expensive. Yes, you get a tax write-off, but you generally have to clean and prepare the system, assign a price (that the IRS will accept) and do some record-keeping. Think of a cost more than $300 per PC.

Selling the PC to an employee is a little better deal, but the preparation costs make it more expensive than simply throwing the PC away. Even selling a system to a used equipment broker generally costs more than you get for the system by at least $100.

Now that the costs of disposing old PCs are up to between 3% and 5% of a PC's total life-cycle cost, companies have begun to realize that paying attention to end-of-life asset management can pay off.

The IDC research yields a few strategies for minimizing disposal costs. Leases are available that let you upgrade to the latest technology after 24 months without paying extra. A program to sell old PCs to used equipment dealers can result in some decent cost recovery. Manufacturer trade-in programs are another way to recover some of the disposal costs.

U.S. corporations are losing money by taking a casual attitude toward PC disposal.

Perhaps the most important message here is that most companies don't really have a good handle on PC burial costs, and most don't have a well-thought-out strategy to deal with obsolete PCs.

Although most companies would like to *extend* the lives of their PCs, that may not always be cost-effective in the long run. Better may be a program for steady replacement that recognizes there is a cost for keeping equipment that is technologically, if not physically, obsolete.

When and how to get rid of PCs is worth some serious thought. You can't just toss them into the Dumpster. That's almost as costly as giving them away. □

Gantz is senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

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Corporate Strategies

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Briefs

FALLING BEHIND

Nearly one-third of U.S. consumer goods manufacturers haven't started renovating their information systems to handle the year 2000 date change

Phases that companies are in:

Base: 122 IS executives from the fashion, food/beverage, packaged goods and specialty industries

Source: Computer Sciences Corp., El Segundo, Calif.

AlliedSignal CIO quits

Ernie Lasor, 46, has left his post as chief information officer at AlliedSignal, Inc.'s Prestone Products Corp. division in Danbury, Conn., to become CIO at Zeed Plastics in Industry City, Calif. Lasor cited his frustration with AlliedSignal's "bureaucracy" as a reason for the move.

County preps for 2000

Douglas County, Neb., which includes the city of Omaha, has hired New York-based Cognizant Technology Solutions to analyze, fix and test its systems for year 2000 compliance. The pact covers more than 4 million lines of code for the county's community development, finance, general government and human resources systems.

CSC in $55M contract

The government of New South Wales in Australia has awarded a five-year, $55 million outsourcing contract to Computer Sciences Corp. (CSC) in El Segundo, Calif. The contract calls for CSC to take over the department of community services' mainframe processing and network services functions. The contract also calls for CSC to establish a wide-area network to connect 140 LANs with 3,000 desktops.

IT pros say money isn't everything

By Julia King

SUAVEY AFTER SUAVEY indicates that money doesn't buy IT workers' loyalty.

David Gonzalez, Donna Falloon and Richard Wiecker are living proof.

The three information technology staffers at Houston-based Methodist Hospital could all bring home bigger salaries and fatter benefits packages from for-profit companies.

Gonzalez, for one, has had several calls from headhunters looking to hire a network security specialist.

"But in spite of the good offers, I've stuck around because they've allowed me to develop my skills here," said Gonzalez, who started out as a computer operator and is now a senior implementation and support analyst.

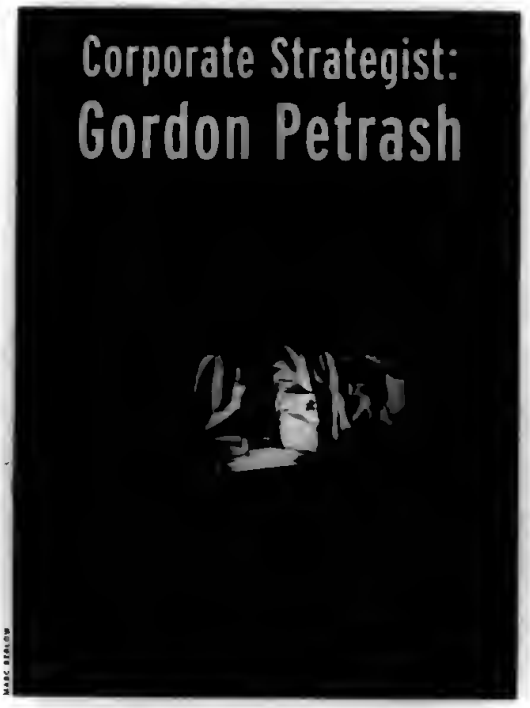
LOW TURNOVER

Letting staffers grow their technical skills is the heart and soul of Methodist's IT employee retention strategy. And judging from the hospital's low IT

IT pros, page 51

• Knowledge-management effort at Dow helps company rein in patents, data

Corporate Strategist: Gordon Petrash



MARC SIEGLOW

By Barb Cole-Gomolski

GORDON PETRASH trained as an architect, but these days the only thing he's building is a culture where corporate knowledge is seen as a precious business asset.

As the global director of intellectual asset management at The Dow Chemical Co., Petrash heads up a group that determines how the Midland, Mich.-based chemical giant manages its intellectual assets. Those include patents, trade secrets and the collective know-how of the company's knowledge workers.

Petrash's goal isn't just to harness information, but to use it to increase revenue, cut costs and make Dow — which has annual revenue of more than $20 billion — more competitive in the marketplace. Focusing on intellectual asset management also helps reveal what the company lacks, Petrash said.

> Successful companies have been managing knowledge for a long time.
> – Gordon Petrash
> Dow Chemical

Getting its patent portfolio in order revealed that maintaining those patents cost about $2 million over 10 years. And about half of the patents "were basically an insurance policy that we never intended to use." As a result, the company weeded out some unused patents, Petrash said.

He said Dow also has been able to enter into two ventures in which it contributed knowl-

Gordon Petrash, page 50

UPI looks to Internet to end profit drought

CRAIG MATHIESON

▸ *Leaders hope to boost numbers by '99*

By Thomas Hoffman

WHEN HE WAS the managing editor of *The London Sunday Times* in the mid-1980s, James Adams was charged with bringing the newspaper's typewriter-bound reporters and editors into the Computer Age. He did it in three months.

Fast-forward to April 1998. As the new CEO at Washington-based United Press International, Adams has pinned his hopes on an Internet delivery model to rescue the news organization from more than 90 years of profitability drought — save for one quarter in 1963.

UPI managed to stay afloat

UPI looks to 'net, page 51

OUTSOURCING

Travel group taps Unisys to reduce costs

By Thomas Hoffman

BALBOA TRAVEL, INC. tracks traveler behavior and finds the lowest-cost alternatives for corporate clients of its $100 million business.

To concentrate on its travel services, San Diego-based Balboa has outsourced its accounting and expense reporting operations to Unisys Corp.

Jose "Joe" G. da Rosa, president and CEO at Balboa, said his agency chose Unisys for its experience in the travel industry. Da Rosa said he expects to knock 25% off Balboa's account-

Travel group, page 51

Corporate Strategist: Gordon Petrash

CONTINUED FROM PAGE 49

edge and its business partner contributed all the hard assets.

Though he said the ventures were lucrative, Petrash wouldn't provide details about them.

Steve Grace, the company's general patent counsel, said Dow was like a lot of companies in that "a lot of our information was scattered throughout the organization in different places."

Grace said the asset management system has turned his team of attorneys from knowledge caretakers into advisers. "We're a lot better at providing our clients [within Dow] with the information they need to make decisions," he said.

Petrash said companies starting out in intellectual asset management should begin with the most tangible parts of the business.

In Dow's case, that was its patents. "We didn't manage them well, and everyone understood them," Petrash said.

Only now — five years into its asset management efforts — is the company looking to capture employee know-how.

Many companies appoint a chief knowledge officer (CKO) to build a system for delivering corporate know-how to the masses, but Dow hasn't.

"The ultimate CKO needs to be the chief executive officer," said Petrash, who believes that asset management needs to become ingrained in the corporate culture and "integrated with everything" to be successful.

> Putting technology on workers' desktops is only part of the picture, Petrash said. It is just as important to build a culture of sharing.

In terms of technology, there is no silver bullet, Petrash said.

Dow doesn't have Lotus Notes, which is a popular platform for such applications.

"We use electronic mail, the Internet, databases, patent-tracking software, voice mail and document management systems," Petrash said. They are all part of Dow's intellectual asset management system, he said.

INCENTIVES

But putting the technology on workers' desktops is only part of the picture, Petrash said. It is just as important to build a culture of sharing.

Petrash said Dow has benefited from being a "technology-driven company that is used to sharing." Still, Dow rewards those who share knowledge and mentors with faster promotions and bigger raises, he said.

Managing knowledge isn't new, Petrash said. "Successful companies have been doing it for a long time," he said.

Dow's ability to profit from its knowledge management program is unusual, said Carl Frappaolo, vice president of The Delphi Group, a research firm in Boston.

"Dow has discovered that there is great value in just knowing something, and they are not afraid of selling that know-how," Frappaolo said. "The days of coming out with a product that is your cash cow are gone. Now, it's just a short amount of time before your competitor figures out what you are doing and duplicates it."

The value then isn't in your trade secret, it's how you got there, Frappaolo said.

"What Dow is doing can enable them to be one of the pioneers in the knowledge-based economy," he said. □

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IT pros: Money isn't everything

CONTINUED FROM PAGE 49

turnover rate, the strategy is working.

In 1996, only eight of more than 100 IT staffers left to take jobs elsewhere.

That fits a trend supported by studies throughout 1997. Four out of five IS staffers turn down offers to work elsewhere — even when offered more money, according to a *Computerworld* survey of 200 IS employees [CW, Feb. 24]. Instead, the most important things to them are the quality of their manager, the technology direction of their IS department and their ability to use that technology.

"Our secret is to find highly qualified people early in their careers and then develop them internally. The benefit then is that they have a certain amount of loyalty for having been given the chance to learn and grow," said Bernie Minard, senior vice president of information systems.

If you get bored, "they'll find another job for you"

Falloon is a prime example. She came to Methodist 11 years ago as a temporary secretary in the IS department. Today, she is supervisor of information technology support and administration.

In the intervening years, Falloon has worked on various IS assignments, including supporting PC users, setting up and administering data networks and, most recently, managing the hospital's intranet. "If you want to learn a new area, Bernie supports you," Falloon said, referring to Minard.

"He sent me to a lot of classes and has taught me a lot. The bottom line is that if you want to learn, he doesn't restrict you. He's one of the major reasons I've stayed," she added.

Wiecker, a network engineer, said the hospital was "a growing environment. If you do get bored, you can always talk to management, and they'll find another job for you. It's things like that that have kept me here."

GOOD EXAMPLE

Other nonprofits looking to increase worker loyalty would do well to adopt a similar strategy, said Tim Walsh, director of strategic planning at Blessing/White, Inc., a consultancy in Princeton, N.J. "There's a real trend toward self-reliance on the technical workforce. If you want to keep technical people, you have to keep their skills sharp," Walsh said.

Walsh also applauded Minard's personal involvement in his workers' career paths. "When you develop a commitment to a company, it's usually through a person," he said. "It's because your manager runs interference for you, gives you access to new technologies and creates learning opportunities." □

UPI looks to 'net to end profit drought

CONTINUED FROM PAGE 49

all these years by having owners with deep pockets. AGI Group in Riyadh, Saudi Arabia, is the latest, having bought UPI in 1993. UPI has halved its losses in the past 12 months, said a company spokeswoman, who wouldn't provide specific figures for the closely held unit.

To become "profitable and relevant," UPI needs to make a fundamental shift in its use of information technology, Adams said. That means more than replicating news stories from UPI's wire service onto the World Wide Web. It means customizing the firm's broadcast, audio and other news services over the Internet for customers, Adams said. Internet delivery channels also are cheaper than satellite systems, he said.

"I can't begin to tell you how many invoices I sign each month for '[satellite] dish crushed by fallen tree' or 'dish filled with snow, can't receive,' " Adams said. He said he expects Web-based delivery channels to feed from 40% to 50% of UPI's revenue stream by 2000.

To help Adams meet his target of making UPI profitable by mid-1999, Adams tapped Andrew Meldrum, a former U.S. Navy test pilot, as the firm's new chief information officer to steer the company's infrastructure development.

During his 10-year IS career in the Navy, Meldrum, 41, rebuilt the infrastructure for the Pentagon's Naval Air Systems Command. Meldrum also helped create a CIO organization for the U.S. Department of the Navy.

Meldrum will have his work cut out for him. UPI's 140 reporters and editors work on dumb terminals connected to a cluster of Digital Equipment Corp. VAX 4340 minicomputers. The core editorial system is written in C and Basic 1.0. "There's no documentation, it's completely impossible to manage. It's a nightmare," Adams said.

With a 20-person IS staff and plans to add 10 more, Meldrum is working with a "several-million-dollar" IT budget to shift the organization to a Microsoft Corp. Windows NT environment that will run off-the-shelf applications by the end of March. "I want Andy to be on time and on budget. I want this place to be completely transformed" by the end of the first quarter in 1998, Adams said.

RESUSCITATION

That will be a big jump for UPI, which by the early 1990s had been left for dead by many. UPI's long-term distribution challenge is "getting information [to newspapers and other customers] before everyone else does," said Steven Barlow, an analyst at Credit Suisse First Boston in New York.

UPI's Internet strategy may be its last and best hope for getting over the profitability hump. Other wire services, such as New York-based Dow Jones & Co.'s Dow Jones Newswires, have generated steady profits. But brutal competition among news services has nipped even Dow Jones' steady profit stream. Pressure from rivals such as Bloomberg Business News in New York helped third-quarter profits sink 82.9%, to $5.57 million at Dow Jones' financial information services group which provides market data for Wall Street traders. □

Travel group tries outsourcing

CONTINUED FROM PAGE 49

ing and reporting costs through outsourcing, though he declined to provide specific figures.

Unisys, a Blue Bell, Pa.-based systems vendor that has turned more to services, recently rolled out a suite of travel management services aimed at slashing high processing costs and replacing clumsy travel management systems for corporate travel managers and travel agencies.

The company can knock off 25% of its reporting/accounting expenses

LOWER COST

Those services include UniTrex, an online expense report processing and payment outsourcing service that Unisys will handle for clients. UniTrex costs $5 per expense report.

Unisys officials said that price is less than the $35 per report that companies typically pay for in-house processing. But those numbers are deceiving, because $35 per report is how much it costs companies that haven't automated their expense report processing, said David K. Hillman, a travel industry consultant at Deloitte & Touche Consulting Group in Parsippany, N.J.

A company that processes 100,000 annual expense reports, "could probably invest in the hardware and software in-house and get payback in two years," Hillman said. For companies that size, it "wouldn't make sense to outsource if they can do it cheaper in-house," he said.

Unisys' services also include UniRes, a World Wide Web-based service that will let corporate travelers make their own reservations online.

The bulk of Unisys' offerings may be more appealing to corporate travel managers than travel agencies because managers want employees to track expenses on the road, Scott Staffiery said.

Staffiery is CEO at Interweave Travel Concepts, a San Jose, Calif.-based Web designer for travel agencies. He chairs a technology committee for a 4,000-member travel agent association. □

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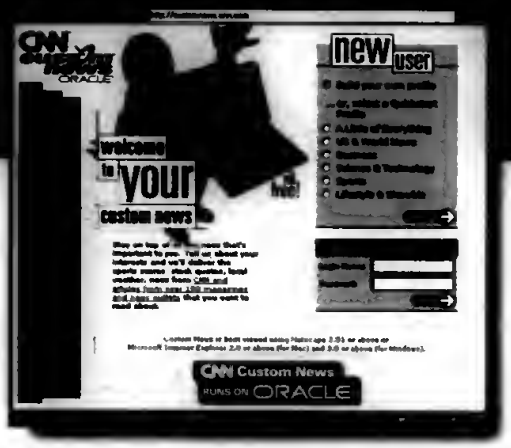

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The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

Bank transaction costs

In person	$1.07
Telephone	$0.54
Automated teller machine	$0.27
PC dial-up	$0.015
Internet	$0.01

Source: Dudley Nipp, Wells Fargo & Co., San Francisco

Super Bowl online

The Super Bowl XXXII World Wide Web site has hit the field at www.superbowl.com, with a virtual tour of cities hosting NFL play-off games. The site will offer live game-day commentary on Jan. 25 and a cybercast featuring broadcasts in Japanese, German, Russian and Italian.

Signed and certified

Netscape Communications Corp. announced that the form-signing feature in its new Netscape Communicator 4.05 client can be used with the digital certificates offered by most major electronic certificate vendors. The feature is key to electronic commerce because it provides persistent proof that users have authorized transactions.

E-commerce hosting

Netscape also announced, with @Home Network, that the two companies will provide hosted electronic-commerce services for corporate customers. @Home Network's @Work division will offer Netscape CommerceXpert, an Internet commerce application software suite.

Group Web selling

Shop.org (www.shop.org), a nonprofit organization formed by online retailers, recently announced that many of its members posted double-digit sales growth in November compared with a year ago and that some had sales growth of 200% or more. Founding members include Garden Escape, CDnow, Eddie Bauer and Sony Online Ventures, Inc.

Web lets publisher extend book sell

By Sharon Gaudin

SIMON & SCHUSTER is writing a new chapter in textbook publishing and posting it on the World Wide Web.

The Upper Saddle River, N.J.-based publishing company, which prints one in every five books read in U.S. colleges, is expanding its text beyond the book to give students at several U.S. universities daily news feeds related to their subject courses.

The Web-based service, called NewsLink, updates daily the 50,000 to 100,000 pages of news content Simon & Schuster researchers cull from news feeds and Web sites around the world.

STEVE BOWERS

Simon & Schuster's Steven L. Epstein says the publisher is focused on giving students up-to-the-minute information

"Certainly one of the very real advantages of being able to make online information available is that it is current," said Kent Portney, a professor of political science at Tufts University in Medford, Mass. Portney added that Simon & Schuster's online text information service is particularly valuable because it gives students selective information they wouldn't otherwise have time to find and read.

GOING MULTIMEDIA

The publishing company is aggressively moving from being a textbook printer to a multimedia content provider, said Steven L. Epstein, vice president of Simon & Schuster's NewsLink Services.

Already, about 20% of its textbooks come with CD-ROMs that offer extra information and animation. Simon & Schuster also has a Web site where students can take online tests, chat with one another and enjoy audio, video and animated simulations.

Epstein said the company is focused on giving students up-to-the-minute information. "We want to make the learning experience more valuable," he said.

Publisher, page 54

Profits elude travel sites

▸ *Consumers seek information but don't buy*

By Sharon Machlis

THE SABRE GROUP's Travelocity Internet site recently posted $3 million in revenue two weeks in a row. Nevertheless, said Sabre Chief Information Officer Terry Jones, "we are losing as much money as the best Internet sites."

Jupiter Communications, Inc. in New York estimates travel is the single largest revenue generator among consumers on the Internet, bringing in more than $800 million in 1997. But for Travelocity, as with most World Wide Web travel sites, profits are still "a couple of years away," Jones said.

That's because for now, consumers tend to visit sites such as Travelocity and Microsoft

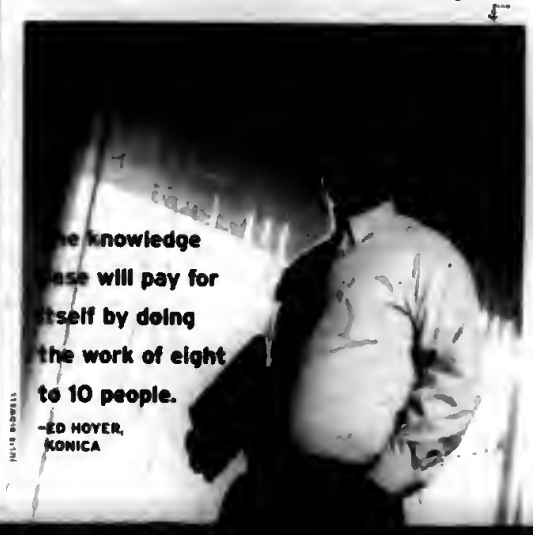
Travel sites, page 54

STEVE BOWERS

Profits for Travelocity are still "a couple of years away," says Sabre CIO Terry Jones

• Konica's technical support

Copier problems fixed by Web database



JULIE BIDWELL

By Kim Girard

FOR KONICA Business Machines USA, Inc., part of staying competitive is fixing jammed copy machines fast.

For the photocopy machine manufacturer, that means providing technicians in the field with better problem-solving tools. In an effort to move ahead of its competitors Canon USA, Inc. in New York and Xerox Corp. in Stamford, Conn., Konica has turned to the World Wide Web to enhance service.

"If they've got a system up and running, they're ahead of the curve," said Hugh Bishop, an analyst at Aberdeen Group,

Copier, page 54

Intranet helps Knight-Ridder centralize buys

By Carol Sliwa

FOR YEARS, Knight-Ridder, Inc. bought ink and newsprint for its many far-flung newspapers through nationwide contracts, but the company's individual business units were on their own for just about everything else.

Now, the company buys all sorts of products and services in bulk through its Florida-based shared service center, and Internet technology is helping to make the process even more cost-effective.

Everyone from department

Knight-Ridder, page 54

Knight-Ridder's intranet

CONTINUED FROM PAGE 53

managers to administrative assistants uses a Web browser to forward purchase requests to the home office. Depending on the purchaser's authorization level, orders either are automatically processed by Oracle Corp. financial software or routed to the purchasing group to be consolidated with other orders and sent out by fax or mail.

"We have a group of people in the Shared Service Center whose sole life is to negotiate nationwide contracts with vendors for all of us," said Terry Smith, information systems director at Knight-Ridder's Shared Services, Inc. "They identify commodities that are purchased on a regular basis by the different business units, and they attempt to strike nationwide/international contracts."

The intranet-based purchasing system evolved from the firm's general technology direction. In 1994, Knight-Ridder decided to connect its newspapers via electronic mail and centralize human resources using a wide-area network hosted by MCI Telecommunications Corp. Consolidating financial transaction processing at its Miami headquarters was a natural next step. Telnet sessions and Oracle smart clients let workers across the country access the databases in Florida. But the upkeep of those clients was expensive.

"We found that 80-plus percent of the PC upgrades we needed to do were to allow people to purchase goods and services," Smith said. "And when we started looking at the amount of money it was going to cost to upgrade all of these PCs for people who do something once or twice a week, economically it didn't make sense."

INTRANET TRANSFORMATION

So the WAN was transformed into an intranet. Clients became Netscape Communications Corp. Web browsers. And the browsers pointed to a Netscape Web server that opened the door to a Hewlett-Packard Co. 9000 server equipped with an Oracle database running financial software applications.

The company still had to develop Web-based applications, but that was more cost-effective than upgrading hardware, Smith said.

Three newspapers went live with Web clients in June. Others followed, and the rest — more than 30 in a stable that is continually changing members — are expected to be completed in the coming months.

"As a first step, it makes sense to deploy an internal purchasing application," said Ezra Gottheil, an analyst at Hurwitz Group, Inc. in Framingham, Mass. "But the ultimate goal is to go directly from the individual purchasers to the suppliers."

Such a business-to-business extranet for outbound purchase order transmissions and inbound invoices is the eventual plan, according to Smith.

Using that system, for example, a newspaper in Minnesota could route its automatically approved request for 1,000 pencils directly to the pencil vendor. The vendor would get the information on a more timely basis and gain the ability to check the status of payments online, Smith said. □

Profits elude travel sites

CONTINUED FROM PAGE 53

Corp.'s Expedia to search for flight information, but then buy their tickets elsewhere. Less than 5% of travel-site browsers actually purchase online, "and it's closer to 1%," according to Seema Williams, an analyst at Forrester Research, Inc. in Cambridge, Mass. In essence, that means those sites are giving away expensive information.

HOPING FOR CHANGE

Sabre is banking on consumers eventually changing their habits. It took a while before users of the Prodigy online service could be enticed to book tickets on the Easy Sabre consumer travel service, he said, but eventually they started buying.

"That product at one point in its life was profitable. The looker-to-booker ratio was good," Williams said.

Meanwhile, as Travelocity prepares to add a new cruise section to its site, the company is bowing to the inevitable. Today's consumers are unlikely to click on a "buy" icon online for a vacation package that costs thousands of dollars without first talking to someone. The new module for booking cruises won't even have an online purchase option. Instead, there will be a toll-free number users can call to order.

"That's OK," Jones said. "As long as I can get them to buy from me."

To entice travelers on to the Web, Travelocity is working to offer services that aren't available from conventional travel agents, Jones said. For example, a paging option allows users to sign up to get information for up to five flights; about a dozen airlines and a half-dozen paging companies participate.

"Personalization products are coming along," Jones said. "There are a lot of interesting possibilities."

Of those who finally decide to book and pay for air tickets or a hotel online, 30% to 50% become repeat customers, Williams said.

"Most of it is looking; very little of it is booking. Over the next year or two, it's going to go up, but slowly," she said.

"The promise is a pretty large self-service customer base. That's a very appealing proposition," she added. □

Copier techs turn to Web

CONTINUED FROM PAGE 53

Inc. in Boston. Bishop said many companies are still working on linking technicians and consolidated help desks to a knowledge base fueled by a search engine.

Konica began using its Web site in May to make available a knowledge base of 48,000 possible problem solutions to

> "We're not afraid of the knowledge being out there. We just don't want the technological information going over [customers'] head."
> Ed Hoyer, Konica

5,000 dealer technicians in North, South and Central America. Technicians have a choice of using the Web site or calling help desk agents — who use the same knowledge base — for solutions.

"We knew that as fast as the market was changing and as expensive as it was to keep this knowledge in people's heads, we needed to get to the point where we could use the Web to keep ahead," said Ed Hoyer, director of customer and technical support at Konica.

With the system, a user can type in a problem, such as "paper jammed in machine." The system narrows down the question and offers options for solving the problem. About 82% of incoming calls can be answered using the database, Hoyer said.

The system ties Software Artistry, Inc.'s Expert Advisor call and problem management software to a Web link. It cost Konica $100,000 for an help desk seats. Hoyer said the system will pay for itself by doing the work of eight to 10 people. So far, the system hasn't reduced the number of incoming calls to the call center but has cut the time callers spend waiting on hold by 20%, he said.

That's crucial to Konica, considering turnover among technicians occurs about every 18 to 24 months and many employees are tackling problems for the first time, Bishop said.

HELP FOR NEWBIES

"An accurate diagnosis means savings on labor and time," said Don Chieski, manager of technical support at Konica's help desk in Windsor, Conn. The system especially helps new employees, who are less familiar with fixing the machines. Help center employees previously had no way to share information for fixing copy machines, typically referring to a paper manual or past troubleshooting experience to solve problems.

"Now, the technician can review the solution to the problem [on the Web], go out to the customer with a printed version and accurately apply the fixes," Chieski said. The company plans to give some technicians laptops to let them use the system from a customer site as well as from their office PCs.

Also, Konica plans next year to open Web queries to its customers.

"We're not afraid of the knowledge being out there. We just don't want the technological information going over their heads," Hoyer said, noting that only experts should help customers with the more complicated problems with machines. "We don't want them to get hurt." □

Publisher

CONTINUED FROM PAGE 53

"We put a [personal identification number] in the back of each book. For that term, the student can access a news feed that we put up each morning. Then at the end of that term, the number expires, and their roommate or whoever gets it next can reinstate it for $10 or $15."

The news feed also presents a new source of income. "As it's always stood, we never got any revenue off those [used] books," he said.

A Java application that runs on the server automatically reformats news that the researchers find, repackages it and puts it on the Web site.

Epstein said a prototype application he built using Perl could handle 20 news sources for 10 disciplines in four hours. Now, with the Java-based application, he can manage 50 content sources for 200 disciplines at the same time.

"With this application, we get the news feed every day, and the next day, it's published," Epstein said. "That's quite a change for us, since we're used to getting a 300-page manuscript in three years, and then we publish it the next year. We're becoming much more current."

But Portney said he would like the NewsLink service to be more expansive. "The one shortcoming it has is that it does not archive *The New York Times*, which is an important source for my area of study," he said.

Michael Barnes, an analyst at Hurwitz Group, Inc. in Framingham, Mass., said Java will be a good language for Simon & Schuster to use as it expands the service, because it is platform-independent and scalable.

"The benefit to them is the ease of deployment," Barnes said. "They don't have to worry about what platforms, browsers or formats pop up in the next few years. And their job should only get easier as Java tools and debuggers mature." □

NEW PRODUCTS

HUMMINGBIRD COMMUNICATIONS LTD. has announced Common Ground Paper2-Web, a scanning application that converts paper documents to World Wide Web-ready files for intranet publishing.

According to the North York, Ontario, company, the Windows application converts scanned images to Hummingbird's proprietary "Digital Paper" file format. The format was designed to preserve the original appearance of a document and to let it be viewed through any Java-enabled browser. It includes an optical character recognition engine.

The product costs $2,995.

Hummingbird Communications
(416) 496-2200
www.hummingbird.com

THE INTERNET FACTORY, INC. has announced Merchant Builder 2.2, an online store creation application for electronic commerce.

According to the Pleasanton, Calif., company, the software now integrates with credit-card authorization software from ICVerify, Inc. It tracks products by type, supports fax or electronic-mail order notification and allows for remote store management through a World Wide Web browser using online forms. The software also collects and manages customer information such as telephone numbers and addresses.

Merchant Builder costs $1,495 for a single store.

The Internet Factory
(510) 426-7763
www.ifact.com

TRAK-IT SOLUTIONS has announced Trak-It AT, Web-ready applicant tracking software for human resources departments.

According to the Citrus Heights, Calif., company, the software has a World Wide Web interface that allows job requisitions to be posted instantly on Web sites or intranets. Customizable Hypertext Markup Language templates help create Web pages that potential employees can access for resume submission. It includes a database that can sort applicants by skills, education, experience and other fields; a contact manager; and reporting features.

The system costs $1,495. The Web option costs $395.

Trak-It Solutions
(916) 728-4880
www.trak-it.com

LINCOLN BEACH SOFTWARE has announced SiteTrak, a Windows program that lets developers submit software to multiple software posting sites on the Internet.

According to the Ballwin, Mn., company, the program contains a list of more than 100 Internet sites that accept software submissions. Using the program, developers can reach about 15 sites per minute. SiteTrak also provides a database of sites contacted. Webmasters receiving software submissions benefit from an importer program that reads E-mail submissions and automatically formats them into Hypertext Markup Language code for pasting on World Wide Web sites.

SiteTrak costs $49.99.

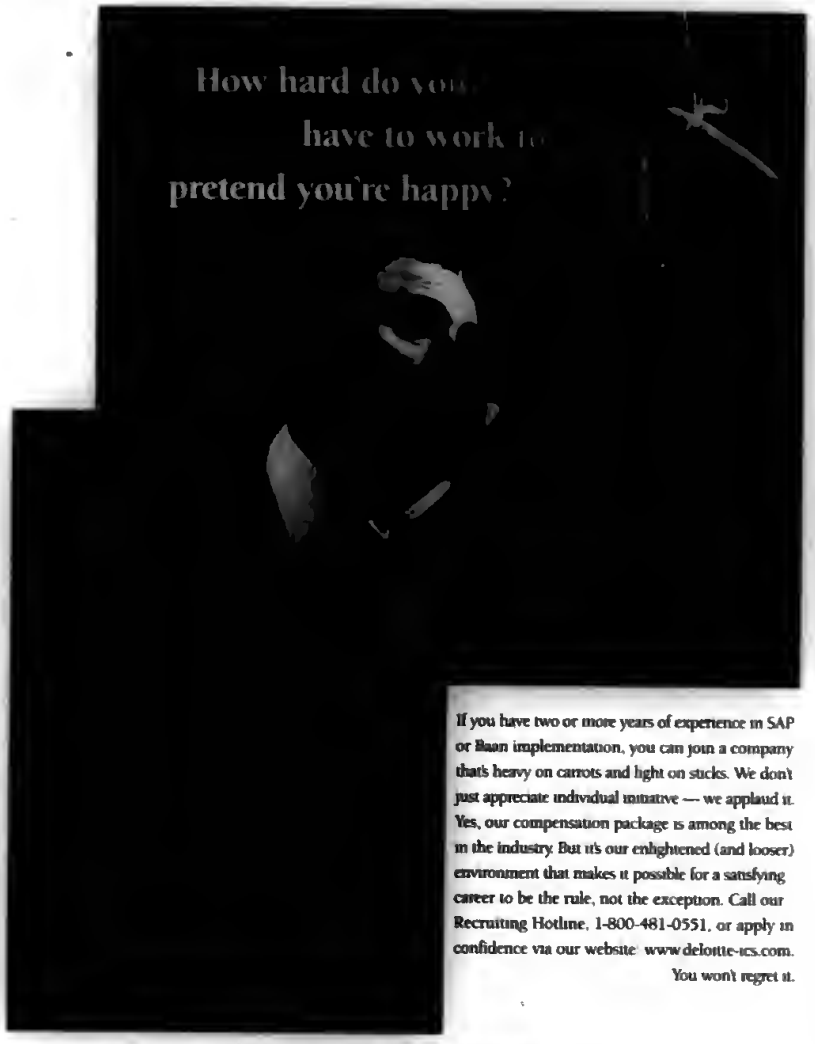
Lincoln Beach Software
(314) 861-1500
www.lincolnbeach.com

ICVERIFY, INC. has announced NetVerify for processing credit cards on the 'net.

According to the Oakland, Calif., company, the software processes Visa, MasterCard, American Express, Discover Card and other private-label credit-card transactions. It has more than 250 processor certifications, providing access to more than 99% of all U.S. banks, the company said. Merchants can use the software to perform real-time or batch transaction processing 24 hours per day using a World Wide Web browser.

First-year leases cost $900, and subsequent years cost $450. For multiple merchant sites, additional merchants can be added for $250 per year.

ICVerify
(510) 553-7500
www.icverify.com



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THE SURGEON
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PC servers* appear to be perfectly harmless. But if you tie them to the growth of your company, you may find yourself with little room to breathe. Especially when you're looking for more transaction throughput, better Web performance, and a scalable home for your key business applications. The Sun™ Enterprise 450 Workgroup Server, starting below $15,000, delivers print and file services for your workstations, thin clients and PCs. What's more, true enterprise-class solutions from Lotus® and Oracle®

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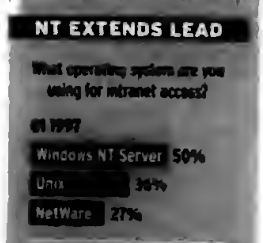
Briefs

NT EXTENDS LEAD

What operating system are you using for intranet access?



Source: 500 Fortune 1,000 companies; multiple responses allowed

Source: International Data Corp., Framingham, Mass.

Outlooking for mail

Microsoft Corp. has posted the second beta version of its Outlook 98 electronic-mail and groupware client at its World Wide Web site (www.microsoft.com/outlook). Outlook 98 will ship in the first half of next year. Pricing wasn't available.

Cisco router

Cisco Systems, Inc. in San Jose, Calif., recently released enhancements to its high- and 7500 and 7500 routers that will let Internet service providers offer a wide variety of service levels to their customers. The new features are built in to the underlying router code and will let service providers offer higher-priority data delivery. The new features also promise fewer delays for transmitting Internet traffic.

Frame-relay service

Adtran, Inc., based in Huntsville, Ala., recently announced the IQ Series of Data Service Units/Channel Service Units, products that will let users view and control the physical and logical connections in frame-relay networks. Businesses can use the devices to compare network performance with the service levels provided by their data carrier. Pricing for the IQ Series units starts at $999.

• Systems overhaul under way

Air Force network key to strategy

By Laura DiDio •

HANSCOM AIR FORCE BASE in Lexington, Mass., is command central for a massive network upgrade the U.S. Air Force is conducting at its 108 bases nationwide.

NETWORK MANAGEMENT

The goal of the eight-year, $1.2 billion Super Highway 2000 project is to attain "information dominance" by using the network as the centerpiece of military strategy in the 21st century.

By the time it is completed in 2004, the project will provide the Air Force with state-of-the-art, interoperable networks and applications to replace the service's often incompatible networks and systems, said Lt. Col. David Genovese. He is the program director for the Combat Information Transport System (CITS) at the Air Force's Electronic Systems Center at Hanscom.

CITS will deliver voice, video and data transmissions for functions that range from mundane payroll processing to futuristic military applications.

Air Force, page 60

The CITS network will give Air Force crew members access to the latest intelligence and battle plans

Small-time project justifies management buy

The catch-22 of client/server management

Problem: IS managers at Time, Inc. needed to examine network traffic to plan capacity, solve response-time problems and gauge the impact of new applications

Complication: Management wanted evidence of value from monitoring tools

Solution: Focused experiment measured use on some LAN and WAN links to prove payback

By Patrick Dryden

IS MANAGERS AT TIME, INC. were caught in a catch-22.

They needed to monitor performance of a network that supports about 8,000 users at 40 sites for the publishing division of Time Warner, Inc.

End users had complained about slow response times, and overloading raised the specter of network crashes, said Bob McNeil, manager of global network operations at Time's network and customer service operations center in Tampa, Fla.

But they couldn't secure tools for the task without measurements to prove their benefit.

"We had a bit of a struggle to get funding," McNeil said. "Since we couldn't provide hard numbers about our network, the financial folks couldn't see any value."

That situation isn't rare, said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. It is just one part of the huge problem information systems managers face when they must justify tools to monitor client/server network performance and handle day-to-day management duties.

> "Since we couldn't provide hard numbers about our network, the financial folks couldn't see any value."
> – Time's Bob McNeil

"[Chief financial officers] demand to know what business benefit they get for spending tens or hundreds of thousands — even millions — of dollars. But IS managers can't convey it for many reasons," McConnell said.

Those reasons include the lack of established methods to assess the value of network service; the inability of many vendors and IS people to translate technology features into meaningful business benefits; and the chicken-and-egg paradox of proof, McConnell said.

SMALL STEPS

To prove its case, Time's IS group started with a minimal monitoring system, McNeil said. It examined a few critical LAN segments and wide-area network links with about $25,000 worth of probe units and analysis software from NetScout Systems, Inc. in Westford, Mass.

The biggest problem was determining what information

Small-time project, page 60

GTE offers secure global virtual network

▸ *Sites updated, monitored for security breaches*

By Matt Hamblen

YOUNG & RUBICAM, INC., an international advertising agency, wanted secure global Internet service to share projects with clients abroad.

So the New York-based company recently signed up with GTE Internetworking Corp. in Cambridge, Mass., to receive its new managed virtual private network (VPN) service, Site Patrol International.

For a monthly fee, GTE installed firewalls at Young & Rubicam sites and established encrypted connections among them across the Internet.

GTE monitors the sites for security breaches and makes regular updates so Young & Rubicam doesn't have to. The VPN provides a higher level of security than a private wide-area network because of the constant monitoring and latest firewalls. "Security is important, and it's not our specialty. GTE is a single security provider, so their service makes it easier for us," said Vincent Fusco, vice president of global networking at Young & Rubicam.

GTE, page 60

GTE network

CONTINUED FROM PAGE 59

Now Young & Rubicam can transfer files and creative materials from its New York office to clients and vendors in London with the comfort that the materials won't be seen by competitors.

National Semiconductor Corp. in Santa Clara, Calif., has been a domestic Site Patrol customer for two years and may soon expand the VPN service internationally, said Tony Nuzzetti, network manager.

National Semiconductor, which has more than 20,000 Internet protocol addresses globally, relies on GTE to provide a national VPN connecting half those users. "When you weigh the cost of Site Patrol compared to keeping a primary and an alternate employee available [to monitor security around the clock], it's a no-brainer," Nuzzetti said.

Companies need security over Internet connections to protect against hackers but often don't have the staff or expertise to provide it, analysts said.

GTE isn't alone in providing secure VPN services domestically. MCI Communications Corp. in Washington; Sprint Corp. in Kansas City, Mo., WorldCom, Inc. in Jackson, Miss., and AT&T Corp. in Armonk, N.Y., have entered the market or plan to enter it soon. But after two years of domestic experience, GTE has secured exemptions from federal agencies and 18 foreign countries to send 56-bit, key-escrypted firewall software and encrypted firewall management software abroad, so it can offer VPN service internationally.

"When you weigh the cost of Site Patrol . . . it's a no-brainer."

– Tony Nuzzetti, National Semiconductor

Fusco said National Semiconductor didn't have the time to jump over the legal hurdles for such approvals. The Clinton administration has placed export embargoes on cryptography with more than 40-bit keys, but exemptions are possible. GTE Internetworking, a unit of GTE Corp., announced Site Patrol International at a starting price of $3,250 per month, per site. It makes sense for a company to consider paying for a security service to get outside expertise, because there are so many industry standards, said analyst Barbara Ells at Zona Research, Inc.□

Air Force revamps network

CONTINUED FROM PAGE 59

"The networks will perform automated planning missions, intelligence dissemination, battle damage assessment and even pull down satellite feeds from remote unmanned vehicles in Bosnia with terrain maps," Genovese said.

Lt. Col Mike Urban, who oversees the Global Grid upgrade for all branches of the service, said the CITS program is "the largest and most cohesive information technology infrastructure project" in the Air Force's history.

VAST IMPROVEMENT

It has a lot to make up for, said Warren Suss, president of Warren H. Suss Associates, a defense consulting coropany in Jenkintown, Pa.

Because of bottlenecks in Air Force networks during the 1991 Gulf War "in some cases, air tasking orders — the next day's bombing targets — had to be printed, shipped out by plane and hand-delivered to the battlefield," Suss said. "The new CITS system will eliminate that. Networks will be among the greatest weapons in 21st-century arsenals."

Electronic Data Systems Corp. will design and implement the network, which includes a physical layer of fiber-optic cabling at all 108 bases to link many redundant Asynchronous Transfer Mode switches at each base. Transmission speeds will vary from 155M bit/sec. OC-3 lines for communications within a base to 622M bit/sec. OC-12 feeds between bases.

The Air Force also will replace its Unix systems with Microsoft Corp. Windows NT Workstation and NT Server networks. "We found that with young recruits and constant turnover, Windows NT was a much more accessible operating system," Genovese said.

Genovese said he expects to finish the first phase — upgrading network security and management — on all 108 bases this year by working on 10 bases per month. The next phase involves upgrades to custom applications.

The Air Force will make its network as nearly impregnable as possible. It will manage the network using Hewlett-Packard Co.'s HP OpenView and will scan it for security holes using Internet Security Systems, Inc.'s SafeSuite security analysis product. OmniGuard Enterprise Security Manager from Rockville, Md.-based Axent Technologies, Inc., will be used to establish policies and apply rules on servers and applications. The Air Force also is using Axent's OmniGuard Intruder Alert to detect hackers.

And a "barrier reef setup" of Netscape Communications Corp.'s Proxy Server and Secure Coroputing, Inc.'s Sidewinder firewall will further guard against network invasions.

"We've installed quadruple security to ensure that only authorized users get access to our TCP/IP network addresses," Genovese said. "The best defense is a good offense, and these networks will give us both."□

Small-time project justifies buy

CONTINUED FROM PAGE 59

would be valuable, McNeil said. "It's easy to get overwhelmed by all the available statistics, so we had to look for a while to find our focus."

The IS group focused first on examining use. Technicians were surprised — and empowered — by being able to see actual usage trends laid out in black and white for the first time, McNeil said.

For example, group members could isolate which stations caused LAN disruptions and congestion without having to dispatch a troubleshooter armed with a protocol analyzer.

That saved staff time and expense, McNeil said, and stopped problems before they affected other users.

And by examining traffic flow through WAN links, they were able to adjust applications to maintain network speed through efficiency rather than bandwidth upgrades.

"We definitely saved money by cost avoidance," McNeil said.

Thus armed, McNeil said, he has been able to expand the initial investment in monitoring tools threefold in order to take better care of more users.□

NEW PRODUCTS

NETOPIA, INC. has announced Virtual Office 2.0, Web site communication software that offers video and voice conferencing, file transfers and remote screen sharing.

According to the Alameda, Calif., firm, the software works with Windows 95 and Windows NT and provides users with a World Wide Web address; an electronic-mail account; and a one-year Web-hosting service subscription.

Virtual Office costs $49.95.

Netopia
(510) 814-5000
www.netopia.com

WHITE PINE SOFTWARE, INC. has announced CU-SeeMe 3.1, a software client for Internet video chat.

According to the Nashua, N.H., company, the software offers cross-platform, H.323 interoperability on Windows 95, Windows NT and the Mac OS. It costs $69.

White Pine Software
(603) 886-9050
www.wpine.com

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Briefs

Management suite

Nortel Technologies, Inc. in New York has announced MQControl, a management suite for users running IBM MQSeries messaging middleware applications. MQControl can manage MQSeries in both Simple Network Management Protocol (SNMP) and non-SNMP modes. Pricing starts at $10,000.

Web-enabled package

Phoenix-based Infotango, Inc. is shipping Infotango Team Project 5W, a World Wide Web-enabled version of its Team Project collaborative project management system for Lotus Notes. With Team Project 5W, project participants can access project information from a Web browser. Pricing starts at $7,000.

Arbor buys AppSource

Arbor Software Corp. in Sunnyvale, Calif., said it is buying AppSource Corp. in Orlando, Fla., a company that makes sales and marketing analysis software for use with Arbor's Essbase multidimensional database. The acquisition gives Arbor an answer to the sales analysis tools that Oracle Corp. sells with its rival Express database. AppSource's Wired for OLAP has about 150 users, Arbor said.

TAKING SIDES

Do you plan to build an enterprise data warehouse, data marts or both?

- Data warehouse only
- Data marts only
- Both
- Neither/uncertain

Base: 695 U.S. IS managers

Source: International Data Corp., Framingham, Mass.

R/3 user markets customized code

▸ *Smooths deal-making but keeps competitive edge*

By Randy Weston

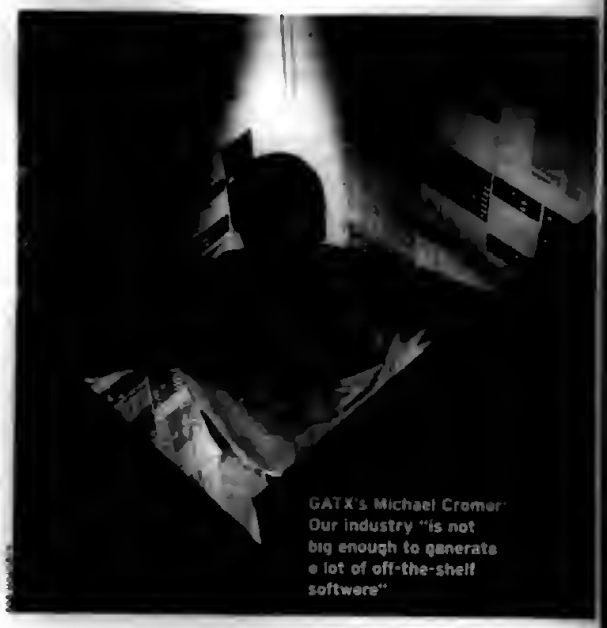
GATX CAPITAL CORP. spent two years customizing SAP AG's R/3 to fit its business. Now the $5 billion San Francisco asset management and leasing firm plans to sell its hard work to its competitors.

"One of the interesting things about the leasing industry is your competitor for one transaction is your partner for the next," said Michael Cromar, chief financial officer at GATX. "When you have a $15 million to $20 million lease on an aircraft, you want partners to share that risk."

You also want your competitors to have software that will let them handle their end of the deal smoothly. Unfortunately, asset management is such a niche market, no packaged applications meet all of the industry's needs. At least that was true until GATX combed through SAP's massive software system and found the functionality it needed buried deep in the belly of R/3 [CW, Dec. 22].

"There needs to be a lot of

R/3 user, page 62



GATX's Michael Cromar: Our industry "is not big enough to generate a lot of off-the-shelf software"

VISUAL BASIC 5.0

Nabisco, MediaSolv cook up app

By Gordon Mah Ung

CREATING NEW COOKIE and cracker flavors at Nabisco, Inc. isn't as easy as changing the ingredients and turning an oven dial.

It is a balancing act of available resources at the $8 billion Parsippany, N.J., company.

To help streamline the process, Nabisco and MediaSolv, Inc. in New York developed a Visual Basic 5.0 application in eight months that tied together Microsoft Corp.'s Outlook, Windows NT and BackOffice and MediaSolv's ActiveFlow to track workflow and collaboration.

"It would have been impossible in another version [of Visual Basic]," said James Moore, a senior systems developer at Nabisco. Moore said limitations in the earlier versions of Visual Basic, including the compiler, would have made such a project unrealistic.

That is one of the reasons

Visual Basic, page 62

Data mining despite the dangers

By Craig Stedman

DATA MINING can inundate users with "discoveries" that turn out to be spurious. But that hasn't stopped adventurous companies from prospecting for nuggets of information that could give them big advantages over their rivals.

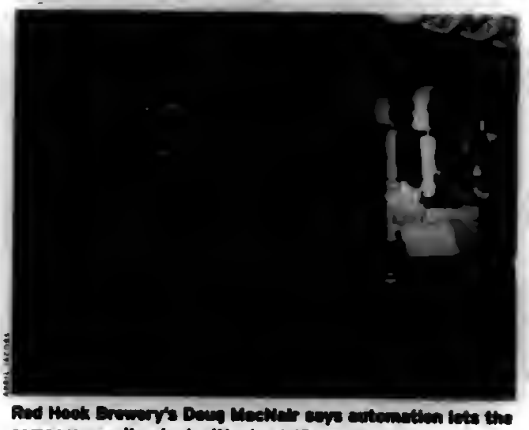
The potential paybacks make the thornier aspects of the technology worth enduring, said several users who have dealt with the invalid and trivial findings that data mining tools can spit out as they search for hard-to-detect patterns and relationships [CW, Dec. 1].

For example, discount brokerage Charles Schwab & Co. uses a mix of data mining and statistical analysis tools to analyze its customers. Mary Kelley, vice president of database and relationship marketing at San Francisco-based Schwab, said more than 80% of her staff's time is spent prepping data and then laboriously testing the results for accuracy.

But the effort is helping

Data mining, page 62

Brewery taps automation software



April Jacobs

Red Hook Brewery's Doug MacNair says automation lets the company run its plant with about 12 employees

By April Jacobs
PORTSMOUTH, N.H.

MAKING ONE BARREL of beer is fun. Making 250,000 a year in multiple flavors is an exact science with growing roots in automation software.

Using a combination of homegrown and off-the-shelf software has proved productive for Red Hook Ale Brewery, Inc., a publicly held company in Seattle with sales of $39.4 million in 1996.

When it began in 1987, the microbrewery hand-brewed beer in small quantities. Now, Red Hook operates nationwide with

Brewery, page 62

Data mining despite dangers

CONTINUED FROM PAGE 61

Schwab predict trading patterns and better target its marketing by segmenting customers into groups based on investment experience and willingness to take risks, Kelley said.

Data mining discoveries make it possible "to push things out to customers rather than just being reactive," she said. "We can now understand various levels of customer sophistication and use that in developing new products and services."

DOWN IN THE DATA MINE

- Gartner Group predicts that 45% of Fortune 1,000 companies will use data mining tools by 2000, up from about 20% now.
- The worldwide data mining market should total $4.2 billion in 1997, according to Meta Group.
- Automated mining tools only make up $650 million of Meta's projection. Most of the money is expected to go to service bureaus and systems integrators.
- Large data mining applications typically cost hundreds of thousands sometimes millions of dollars, analysts said.
- Data mining tools are available from more than 50 vendors, many of them start-ups or small companies.

PROS AND CONS

The Chase Manhattan Bank Corp. in New York also is doing some heavy-duty digging in the data mine. The bank stubbed its toes on a couple of early findings that turned out to be faulty, and the tools it uses continue to routinely present results that are erroneous or useless.

But automated mining tools also have come up with strategy-changing results for the bank, said Mike Eichorst, vice president of predictive modeling and data mining at Chase Manhattan's Consumer Credit unit.

For example, data mining overturned the conventional wisdom that people with multiple accounts were bound to be the bank's best customers, Eichorst said. "We discovered that a lot of customers with multiple accounts actually are unprofitable," he said. "That totally refocused the bank on the way we sell products. The idea now is not just to cross-sell accounts to people like crazy."

The amount of invalid or meaningless findings that data mining tools inflict on users "is kind of like drinking water from a firehose," said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston.

But using data mining to narrow marketing campaigns to the customers who are likely to be interested "can translate into millions of dollars at the bottom line," he added.

Bell Canada, Inc. in Montreal uses IBM's Intelligent Miner software and other data mining tools to do just that sort of segmentation and prioritization in its business telephone customer base.

Deregulation that is bringing new local phone competition in January makes "customer intimacy" crucial to Bell Canada, said Chuck Hendriks, director of market planning and programs. Data mining helps the company understand "who our customers are, what they would like and what we deliver vs. their expectations," he said.

It took time to learn to use the tools effectively. But a year down the road, Bell Canada can "get much better outcomes," Hendriks said. "We're asking more and more complex questions all the time." □

R/3 user

CONTINUED FROM PAGE 61

openness among competitors in this business," Cromar said. "It is not an industry that is big enough to generate a lot of off-the-shelf software for all its transactions."

That is part of the reason that GATX decided to build the functionality that wasn't in R/3.

"No one has done leasing in SAP before. We are the first to do it totally in R/3," Cromar said. He said competitors such as Chicago-based First Chicago NBD Corp. and Pitney Bowes, Inc. in Stamford, Conn., are asking GATX for a bit of help accomplishing the same thing.

"SAP is infinitely more customizable than the press clippings would let you imagine," Cromar said.

"We had to find what functionality was in R/3 and then understand our processes. Then we had to determine where we had a good match, define the gaps and then write code to fill the gaps," he said.

And now GATX is ready to take that work to market. It is discussing with SAP becoming a complementary software partner, a certification that requires GATX's product to withstand a rigorous audit at SAP's Waldorf, Germany, headquarters.

It took about 114,000 man-hours for GATX to fit R/3 to its needs. In late December, it was preparing to go live Jan. 1 on its customized R/3 system.

Although it sounds like a difficult and expensive project, Cromar said his company spent less than half the $15 million analysts told GATX such a venture would cost.

COMPETITION

But one question remains. If GATX sells its hard work to its competitors, doesn't it lose the competitive advantage it gained from its pain of customizing R/3? Cromar said the edge isn't in the software — it is in the people who use that software.

"We make our money managing assets and doing good leasing transactions, not from the software we use," he said. "Everybody uses the same packaged applications. The real competitive advantage is in the minds of the people who apply the software to a competitive advantage."

Analyst Josh Greenbaum at Hurwitz Group, Inc. in Framingham, Mass., said more companies, especially those in highly specialized markets, are realizing that.

"This is part of a trend going on for a while where organizations become software houses or software developers for the marketplace," Greenbaum explained.

He said because GATX modified an existing application package, the firm "avoided running into the mistake a lot of companies run into of trying to develop everything themselves and becoming too much of a software company." □

Brewery

CONTINUED FROM PAGE 61

plants in Seattle, Woodenville, Wash., and Portsmouth, N.H.

To accommodate its growth and maintain quality, Red Hook turned to software-based automation to give its brews consistency and to help its plants operate more efficiently.

The company in 1991 purchased a working brewery near Seattle and began automating its processes. Since then, the company has developed software and used some off-the-shelf applications to monitor and automate processes for its beers.

Red Hook uses a software package called Braumat, which was developed by the Huppmann Group in Kitzingen, Germany, and Siemens Energy and Automation, Inc. in Alpharetta, Ga. Siemens also manufactures process control systems.

Red Hook runs its brewing, bottling and kegging from a process control system. Other processes, including boiling, hot water, cooling and chemistry, are run from Siemens Programmable Logic Controller systems, which were designed for high-speed industrial environments.

Doug MacNair, operations manager at Red Hook's Portsmouth brewing plant, said automation lets the company run its plant with about 12 employees — about half the number it would require otherwise.

Red Hook also can produce microbrews with a consistent flavor — something that is difficult to accomplish when brewing by hand. "We are hoping to be able to carry this a lot further — to the extent that we can begin programming the system to help cut our utility costs by using power when it's cheapest. Because the cooling costs associated with the process are enormous," MacNair said.

Red Hook is a front-runner in the business, but automation is a major issue for the entire beverage industry — both in manufacturing and distribution, said Scott Lundstrom, director of research for enabling technologies at Advanced Manufacturing Research, Inc. in Boston.

"Companies are trying to integrate both the production and distribution sides of the business to make it more efficient. That's where this industry as a whole is going to go because companies want to be able to react in a more timely and efficient manner," Lundstrom said. □

Visual Basic

CONTINUED FROM PAGE 61

Nabisco adopted Visual Basic 5.0 Enterprise Edition in June, Moore said. Nabisco is one of many companies adopting the enterprise edition of Visual Basic that was introduced in February.

Analysts said use of Visual Basic 5 Enterprise Edition and Visual Basic overall would continue to be strong among developers, even though much of the noise is about Java

SECURITY ISSUE

Nabisco also has developed enterprisewide applications to track the purchase of vehicles, and it is working on an application for pen-based computers Another application made it easier for help desk technicians to change end users' passwords in Windows NT.

"We didn't want to make everyone at work [on the help desk] an administrator," Moore said. A Visual Basic application lets technicians change passwords instantly. "In doing that, we were able to create a utility in real time that validates the security of the user," he said.

About one-third of the company's 300 developers use Visual Basic to help smooth the migration to Windows NT. About 5,000 to 6,000 of the company's 8,000 desktops already use 16-bit applications developed in Visual Basic 3.0.

Nabisco still is developing applications in Visual Basic 3.0 for 16-bit desktops and in other tools, depending on the needs of each business unit.

Moore said pockets of the company use ActiveX support in Visual Basic to develop World Wide Web-based applications, but most of the development is still client/server and N-tier.

An N-tier architecture is one in which an application's user interface, application logic and data were designed separately, so different parts run on different machines in a network.

Eric Brown, a senior analyst at Forrester Research, Inc. in Cambridge, Mass., said Visual Basic 5.0 can support three-tier application development, one of the major distinctions between it and earlier versions.

This ability is becoming increasingly important, although there is still much development with fat clients and client/server applications, Brown said. □

NT delays nudge users toward Windows 98

By April Jacobs

WINDOWS NT WORKSTATION shipment delays and better management tools in Windows 98 have some users considering Windows 98 instead of NT for future desktop upgrades.

"We're running Windows 95 right now, but there are tools in Windows 98 that are going to make life much easier, especially in the area of networked PC connections and Web tools," said Wayne Hastings, assistant vice president at Detroit Edison Corp. in Detroit.

Hastings said the company has considered NT but is unlikely to adopt a first version of Microsoft Corp.'s NT 5.0 operating system. Detroit Edison, which has 12,000 PC users, recently upgraded to Windows 95 on the desktop, and Hastings said he expects early versions of NT 5.0 to be full of bugs. The company uses NT on the server, however.

"Microsoft is positioning the NT platform to be the operating system of choice for business, and it will be interesting to see if they can sell that."

– Dan Grosz, Timberland Co.

Hastings said Detroit Edison will likely adopt Windows 98 in the second half of 1998 — mostly for embedded tools such as Microsoft's Zero Administration, which eliminates the need to load software at the desktop and lets administrators poll desktops for trouble spots.

Hastings said features that allow remote setup and software distribution can save time and money. Integration with Microsoft's Internet Explorer, which lets users toggle between the Internet and data files, also will save users time.

"Windows 98 is going to have a big impact in the market," said Mike Gartenberg, an analyst at Stamford, Conn.-based Gartner Group, Inc. With Windows NT Workstation 5.0 shipping late in 1998, most corporate customers would be wise to think twice about migration plans that must take place before mid-1999, Gartenberg said.

Dan Grosz, director of business systems planning at Timberland Co., a Stratham, N.H.-based shoemaker, concurs.

"We are using NT for some of our servers, but not as a desktop operating system. We just completed a move to Windows 95, and we'll stick with that for quite some time, because Microsoft's initial releases tend to be fairly buggy," Grosz said.

"Certainly, Microsoft is positioning the NT platform to be the operating system of choice for business, and it will be interesting to see if they can sell that," he said.

Most users won't be able to handle the footprint of NT Workstation. It optimally runs on a Pentium II-class desktop with 64M bytes of memory. "That just isn't the typical machine," Gartenberg said.

Support for features such as ACPI — an advanced power and configuration standard — won't appear on most hardware until mid-1998, he said. □

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Briefs

Analysis for CDs

No, this software and hardware doesn't analyze your id and ego, but it is called Freud. The new product from MicroTech Conversion Systems in Belmont, Calif., is an eight-speed media analyzer/tester for verifying data on compact discs. Consultations with the doctor aren't cheap, at $5,000 per drive, with software, PC board and cable.

PC/TV to grow

The market for PC/television convergence products is predicted to grow by 74% in 1998, according to a study by Frost & Sullivan, Inc. in Mountain View, Calif. The study, which said the market grew by 109% in 1996, to $89 million, defined the market as scan converters, set-top boxes, TV tuner cards and PCs and TVs in one chassis.

NEC to ship cheap chip

NEC Electronics, Inc. has started sampling a low-cost version of its VR4300 series of 64-bit RISC processors that will be available by first-quarter 1998 at prices of less than $10 in the U.S. Aimed at the market for price-sensitive embedded applications, the 64-bit, 80-MHz VR4305 chip can be used for set-top boxes, network computers, low-end printers and consumer electronics appliances.

ENTERPRISE STORAGE ROAD

Data centers' progress toward centralizing storage:

Base: 700 IS managers
Source: Frost/SVP, New York

Unix vendors flock to Merced chip

By Jaikumar Vijayan

THE RECENT FLURRY of vendor support around the upcoming 64-bit Merced chip could signal the beginning of a consolidation of hardware platforms.

That will take at least another three to five years to happen, and a lot will depend on how well Merced lives up to its promise of significantly better price/performance than current Intel and RISC architectures, analysts said.

Merced is the forthcoming 64-bit chip being developed jointly by Intel Corp. and Hewlett-Packard Co. Its promise lies in its ability to run x86 and Unix applications equally well and, in theory at least, at a lower cost than current RISC-based workstations and servers. The chip is expected to ship in 1999.

Sun Microsystems, Inc. became the latest vendor to lend support to the chip when it announced an alliance with Intel under which Sun will port its Solaris operating system to Merced (CW, Dec. 22).

For users, such a consolidation of broad industry support

Unix vendors, page 67

JAMES BOSSENBERY

Du Pont's David Pensak says if Merced offers performance gains, "the porting of Solaris to Merced could be significant. Otherwise, the whole thing really is a big yawn."

NT is getting graphical

▸ *Graphics workstation vendors eye Windows, hope for market growth*

By Nancy Dillon

USERS AND ANALYSTS say the future of the midrange to low-end graphics workstation market is with Microsoft Corp.'s Windows NT — and more workstation vendors seem to be catching on. That market includes workstations used for desktop media publishing, animation, computer-aided design modeling, World Wide Web site creation and video editing.

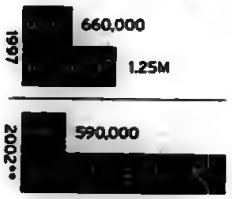
Mountain View, Calif.-based Silicon Graphics, Inc. (SGI) announced Dec. 17 that it will release in the second half of 1998 a system called the Visual PC. The Visual PC will combine the ability to run Windows applications with SGI's graphics and multimedia technology, although the company hasn't yet announced how it will do that.

"This announcement is important because the majority of [users in] the graphics workstation market are at the lower end, and what they want is interoperability," said Keren Seymour, an analyst at Framingham, Mass.-based International Data Corp. "Users who don't need Unix to build airplanes on their workstations want one system for E-mail, programs and graphics." Seymour said manufacturers of large, complex products will continue to use Unix, but makers of less resource-intensive products, such as parts manufacturers, will use NT.

"I have an SGI workstation on one side of my desk and a PC on the other," said Art Anderson, manager of advanced vehicle engineering at Chrysler Corp. in Auburn Hills, Mich.

NT, page 69

Worldwide shipments of traditional workstations*



* Workstations used for graphics, engineering and database management
** Projected

Source: International Data Corp., Framingham, Mass.

Human services get tech boost

By Tim Ouellette

THE STATE OF Montana is putting a new face on its legacy human services applications that will help it slash budget requirements and reach out to more people seeking its services.

But it isn't just a simple facelift.

The move will also help the state improve the way it conducts business with citizens and could be a blueprint for businesses looking to change how they interact with customers.

Specifically, the Montana Department of Public Health and Human Services has created a Virtual Human Service Pavilion designed to make it easy for users to choose a service by going through a virtual door. The pavilion gives citizens access to legacy systems that contain information on welfare, job planning, child support and child care services.

For example, someone looking for a copy of his birth certificate can get it printed for free from a PC workstation in minutes rather than paying $10 for what could be a three-week process, said Mike Billings, administrator of operations and technology at the department.

And the whole paper-based welfare application process will eventually be scrapped in favor of computer-based data entry by applicants.

"The completion of a welfare application itself can be a hideous task for both the applicant and the state employees trying to process it," Billings said. With the virtual pavilion, "we have the potential to save

Montana, page 71

Montana's Virtual Human Service Pavilion gives residents online access to government services

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Unix vendors get Merced

CONTINUED FROM PAGE 65

will mean more enterprise-level application software and operating system support around Intel-based architectures.

Sun user David Pensak, a senior research fellow at Du Pont Co. in Wilmington, Del., is waiting for Merced to ship to see if that happens.

"If Merced offers better performance than [SPARC-based systems], the porting of Solaris to Merced could be significaot," Pensak said. "Otherwise, the whole thing really is a big yawn."

During the past few months, almost all the major Unix vendors, with the exception of IBM, have announced decisions to port their respective operating system versions to Merced.

Apart from Sun and HP, Digital Equipment Corp. in Maynard, Mass., and SCO, Inc. in Santa Cruz, Calif., have committed to porting their Unix operating systems to Merced.

ABANDONED PLATFORMS

Because Merced systems are expected to offer better price/performance than RISC systems, most Unix vendors are expected to start abandoning their platforms when Merced starts shipping in volume. For instance, a Merced-based Solaris system is expected to be less expensive than a RISC-based one.

As a result, vendors such as HP and Digital are hedging their bets by offering users a dual-architecture hardware strategy. But that will change if Merced lives up to its promise, analysts said.

Sun's SPARC, for example, will be around for at least another two to three years, "but I wouldn't bet the farm on it being around much longer," said Thomas Kucharvy, president of Summit Strategies, Inc. in Boston.

"Eventually, you are going to see a fading away of RISC-based architectures," said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

Already, two major RISC alternatives, the PowerPC and the MIPS chip, both of which were positioned at the high end of the Windows NT market, have faded as viable NT platforms.

The resulting consolidatioo around Intel architectures "will mean that users will have no alternatives. And that is a bad thing," Garden said. "Intel will by default become a de facto monopoly player" in the chip business, he said.

Although some of the current moves could lead to a consolidation around Intel, purchase decisions are driven more by the software that is available on a platform than by the hardware it runs on, said Michael Prince, director of Burlington Coat Factory Warehouse Co. in Burlington, N.J.

"Merced may be a major cornerstone of Intel architecture. But my only concern would be the general availability of software around Merced," Prince said. If software was available, moving to Intel wouldn't be a big deal, he said. "In fact, one of the big advantages of moving to Intel is the commodity hardware" and its lower prices, he said. □

NEW PRODUCT

STORAGE DIMENSIONS, INC. has announced the P1000 Library Array, an automated digital linear tape (DLT) tape library for Windows NT network environments.

According to the Milpitas, Calif., company, the array has a maximum capacity of 2.1T bytes. It can be configured with between two and four DLT drives and between 16 and 30 tape cartridge slots. A 640G-byte entry-level system starts at $24,000.

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Managing Re-Systemization

How U S WEST Dex moved from a mainframe to a distributed environment with PATROL

U S WEST Dex, one of many U S WEST companies, sells Yellow Pages advertising, related mailing lists and other products that are derived from telephone directories. In all, they publish over 300 directories with over 42 million printed copies.

Handling all of this publishing and taking care of nearly half a million USA and international clients calls for complete distribution of data 24 hours a day. All of the company's critical applications must be available to thousands of users.

The original mainframe needed upgrading and the decision was made by U S WEST Dex management to move to a distributed environment. Over a period of many months, operational processes were decreased on the mainframe and increased on the distributed systems.

U S WEST Dex created a new group called the "System Management Center" (SMC) to recommend products to help them ease and manage the transition. As interactioo with the SMC progressed over a couple of months, one partner relationship between two vendors stood out, that of Hewlett-Packard and BMC Software.

"We found that the partner relationship between these two companies was able to satisfy a broad range of our needs. The joint presentation of their individual products tended to complement and even strengthen each other. We saw clear advantages to both vendors working with us as a single team rather than separately. We awarded them our contract jointly and plan to order more later this year," explains Project Manager Henry Vargas of U S WEST Dex.

"Our business-critical applications have been re-architected into the client/server model to help give us a competitive advantage. We use the Hewlett-Packard systems due to their mission-critical capabilities, high performance and the ability of Hewlett-Packard and BMC Software to put together a solution."

These products will provide U S WEST Dex with the ability to collect information from their new distribnted computing environment and process it to report the status of individual elements within their IT environment. They will be able to graphically show the current status of all elemeots of their enterprise, including oetworks, systems, applications and databases, and manage them through one console. They should realize a seamless, easy transitioo of critical systems with reduced user downtime.

"We are pleased to be working with BMC Software on this project," said Busioess Developmeot Manager Travis Muesing, of Hewlett-Packard. "We have worked with them before and have always felt that our products, services, support and education complement each other. Together, we can always provide our customers with a complete, timely and cost-effective solution to their integrated oetwork and system management needs."

U S WEST Dex plans to incorporate more of the Hewlett-Packard and BMC Software products to provide additioual support for IT operations, performance monitoring and IT administration.

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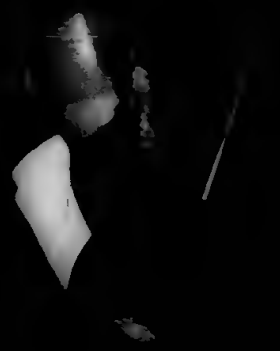

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NT gets graphic

CONTINUED FROM PAGE 65

"I'd like to bring them together to simplify things." Anderson uses his SGI workstation for three-dimensional design and visualization. Another SGI workstation user said he was interested in the Visual PC but added that price will be a key factor.

"I have an O2 workstation from SGI, and although it was only about $7,000, the software costs tens of thousands more," said Stephen Mack, a 3-D animator/designer at Crawford Communications Corp. in Atlanta. "But if they can bring SGI software and hardware into a Windows machine with a competitive price, that's some powerful stuff."

NEW GRAPHICS WORKSTATIONS

Digital Equipment Corp. also recently introduced a Windows NT personal graphics workstation. Called the Creation Studio, the workstation comes with a 300-MHz Pentium II processor or a 500-MHz Alpha chip. It costs $4,995.

Another big player in the NT workstation space is Huntsville, Ala.-based Intergraph Computer Systems, which released several NT workstations in the fall.

Lee Wojnar, president of graphics design company Wojnar Productions, Inc. in Philadelphia, said his organization chose Intergraph NT workstations for the operating system. "We went with NT because, with all of the Web development and applications now in the works for NT, we believe that future offerings are going to be endless," Wojnar said.

Digital's Creation Studio, a personal graphics workstation

Jon Peddie, a graphics analyst at Jon Peddie Associates in Tiburon, Calif., said the Visual PC will compete with Digital's Creative Studio, new Macintosh workstations from Apple Computer, Inc., Intergraph's ExtremeZ and NT workstations from other major PC manufacturers.

"The trend in the market is there, and it's toward NT," Peddie said. □

NEW PRODUCTS

SEAGATE TECHNOLOGY, INC. has announced the Elite 47, a Winchester disk drive that can store 47G bytes.

According to the Scotts Valley, Calif., company, the 5,400-rpm disk drive reads and writes at speeds of up to 184M bit/sec. The Elite 47 has an UltraSCSI interface and a 5.25-in. height.

The drive was designed for large central storage applications and professional video. Seagate officials said the company will allow 1T-byte arrays to be built using 22 Elite 47 drives.

The Elite 47 costs $2,995.

Seagate Technology
(408) 438-6550
www.seagate.com

SHERWOOD NETWORK DIVISION has announced the Sherwood Passport Network Computer.

According to the Hayward, Calif., company, the system was designed for multiuser environments such as point-of-sale. The Passport Network Computer can connect to IBM, Microsoft Corp., Novell, Inc. or Unix host servers over a network, either through its built-in Ethernet port or its RS-232 serial port. Options include a 233-MHz Pentium processor, 256M bytes of RAM, an audio port and 4M bytes of Video RAM (VRAM).

A standard system, which includes 16M bytes of RAM and 1M byte of VRAM, costs $800.

Sherwood Network Division
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From Desktop to Enterprise

Leaders in I/O Technology

The demand for device driver portability between operating systems and host platforms, combined with increasing requirements for intelligent, distributed I/O processing has led to the development of the Intelligent Input/Output, or I2O specification. BMC Software and Intel Corp. are working closely with the I2O Special Interest Group (SIG) to bring I2O-compliant technologies to market, including integrating PATROL Management solutions with the Intel i960RP I/O processor.

"The importance that the Intel/BMC relationship brings to the market is that BMC innovation in I/O technology naturally makes them a leader in this collective new I/O-centric industry," states Alan Steinberg, Director of New Business Development, Connected P.C. Division at Intel. "Currently we have companies coming in from the desktop and from other areas of the industry that don't necessarily have the Enterprise experience BMC Software has to deal with the type of I/O that is needed in what could be called the new 'open mainframe' world."

Steinberg envisions a world where Microsoft will provide the main operating system, Intel will provide the hardware architecture and BMC Software will contribute the key I2O-compliant management technology. BMC Software's role will be to help architect what Steinberg calls the "highly available, highly manageable open system mainframe" on the I/O space.

Bob Beauchamp, Vice President of Strategic Marketing and Corporate Development for BMC Software, agrees. "The pervasiveness of the i960 chip in the Windows NT and NetWare environments, combined with BMC Software's PATROL technology, will empower customers with unprecedented management and monitoring capabilities from the application to the motherboard."

Clearly, the ability to gather statistics regarding I/O is a great step forward. The PATROL Application Management Suite completes the picture by correlating I/O statistics with the applications that are utilizing the I2O components or sub-system. This allows unprecedented optimization capabilities, such as automated load balancing, cache reallocation, and the rerouting of network traffic. All of these capabilities can be performed on demand and are based on the performance requirements of the applications.

Currently, no two vendors come as close as Intel and BMC Software in providing this comprehensive approach to I/O processing and manageability.

"We've moved into a new paradigm where I/O is as important as the central CPU technology," states Steinberg. "This shift will allow BMC to proliferate its management product line in the open systems environment. Pairing Intel I/O technology with PATROL is just the very beginning. It's the first product of many, as this new I/O-centered technology emerges into the marketplace, and we think it's going to be an exciting ride."

Intel

Corp. is integrating PATROL® management technology into the i960RP® I/O processor in order to provide the direct management capabilities for I/O subsystems customers are asking for.

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Montana services online

CONTINUED FROM PAGE 65

quite a lot of time, and it will also force us to pare down the nature of the form itself in the future."

Montana is just one of the many governments and businesses to bring mainframe applications onto the World Wide Web. That is why market research firm International Data Corp. in Framingham, Mass., expects that Web-to-host software sales alone jumped from $5 million in 1996 to $80 million in 1997.

The pavilion project stemmed from Montana's welfare reform law, passed in 1995. That would have required an additional 70 counselors and technicians to help families prepare agreements on a plan to get them off welfare.

Instead, Billings turned to a system that uses Corridor, software from Teubner & Associates, Inc. in Stillwater, Okla., to turn legacy 3270 mainframe forms into Hypertext Markup Language (HTML) documents. The intranet-based HTML documents can be more easily understood and navigated by the public.

"We put a graphical interface on every 3270 screen — almost 400 of them — on the mainframe humao services system," said Jack Ellery, site director at BDM International, the McLean, Va., company contracted to do the integration work for the state.

Corridor can generate HTML on the fly to the target screen or let users customize the content up front, which is how BDM created the pavilion. A tool called Sapphire/Web from Bluestone Software, Inc. in Mount Laurel, N.J., pulls data from Unix-based Oracle Corp. databases into the pavilion.

The system, being pilot-tested now, will go online in February and will be accessible from PC workstations in 23 job services offices around the state. The workstations are attached to a statewide intranet. More workstations will be added to job services offices and possibly to schools and libraries across the state in the future.

Also, the system won't focus solely on government agencies. Eventually, medical providers will be able to check the system and pull up a person's Medicaid record to confirm Medicaid acceptance, Billings said. □

NEW PRODUCTS

ADVANCED DIGITAL INFORMATION CORP. has announced FastStor, a seven-tape, automated digital linear tape (DLT) storage device for backup at remote or several-server sites.

According to the Redmond, Wash., company, the DLT storage device includes a single DLT drive and seven DLT tape cartridges in a compact enclosure that is 7 by 9.5 by 22 in. It was designed to fit on top of standard servers and can offer a total capacity of 490G bytes.

It is available with a DLT4000 or DLT7000 drive.

A DLT4000 unit costs $5,995.

Advanced Digital Information Corp.
(425) 881-8004
www.adic.com

HITACHI PC CORP. has announced VisionDesk LCD, a desktop computer with a 13.3-in. LCD panel.

According to the San Jose, Calif., company, the VisionDesk LCD's flat-panel display provides 1,024 by 768 resolution.

It includes a 233-MHz Pentium processor, a 4.3G-byte hard drive and a 20-speed CD-ROM drive. An onboard 10Base-T/100Base-T LAN adapter and a built-in 56K bit/sec. modem help users plug in to networks without having to adjust settings and drivers.

VisionDesk LCD costs $3,299.

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Advertisement

Smooth Transitions

Louis Poulsen & Co. smoothes their transition to SAP R/3 and open systems with PATROL

Denmark's Louis Poulsen & Co. A/S is known internationally as the manufacturer of the world-famous PH lamps, and as sellers of electrical appliances. Louis Poulsen has its production wing based in Denmark, but sales and distribution offices are spread around the world on four continents. Consequently, it is a company with simultaneous requirements for advanced production management, effective logistics, and continuous budget control across a geographically distributed environment.

To more effectively meet these requirements, Louis Poulsen decided to move their IT operations from an IBM mainframe system to an SAP R/3 solution running on IBM RS/6000 hardware with the Informix RDBMS.

The benefit is obvious when the entire system is running smoothly – no matter where in the world requests come from, everyone receives up-to-date and exact information. However, when things are not running smoothly, the problems are also obvious.

Louis Poulsen realized they could more effectively utilize client/server solutions if they made automated management part of their overall management strategy. Their first step was to introduce the IBM NetView product for management of their network environment. The next step was to incorporate automated application and database management through the PATROL® Management Suite of products from BMC Software.

Peter Jacobsen, manager of IT operations states that, "without a doubt, automated monitoring of the Informix database, especially the PATROL features that help ensure log files do not overflow, has helped avoid a number of situations that would otherwise have resulted in an outage."

When BMC Software announced in 1996 a PATROL Knowledge Module that would proactively manage SAP R/3, it was an easy decision for Louis Poulsen to trial the product. "SAP R/3 comes with a systems management tool called CCMS," says Jacobsen, "but to use it you need manual interaction. PATROL gave us the ability to automatically monitor relevant R/3 parameters and, at the same time, have information about them presented to us in context with other information from PATROL about our databases and platforms. With PATROL, we get a complete overview about how our application environment is operating."

Through PATROL, Louis Poulsen learned of a number of important parameters in their application environment that could be monitored and tuned to support higher application availability and improve performance – parameters they didn't even know the existence of before PATROL. Now, at any time, they have instant access to this important information. Says Jacobsen, "With PATROL, we have a tool that allows us to drill deep into our systems, applications and databases for information. Plus, PATROL lets us know if changes we are making in one area of our environment will have a negative impact on other areas. There are still many things we have to learn about PATROL, but we definitely know it is necessary for future management and tuning of the system as well as our insurance for keeping up with the end users' demands for availability."

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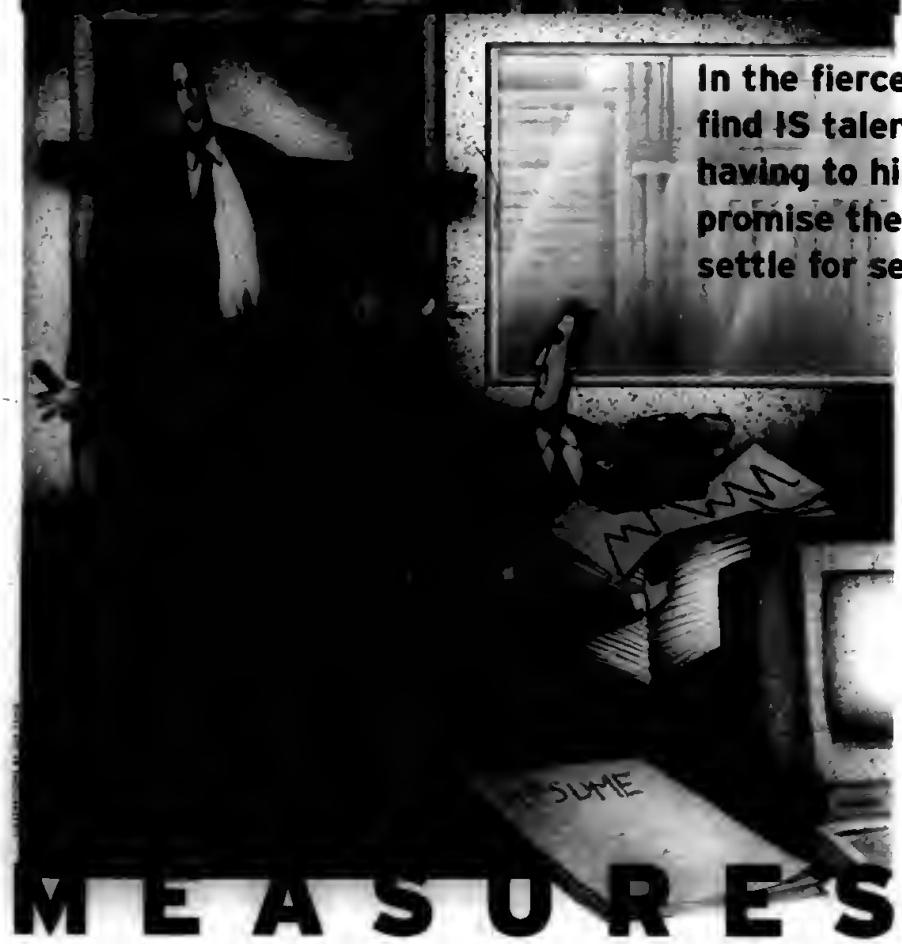
Jobs Forecast '98

DESPERATE MEASURES

In the fierce struggle to find IS talent, managers are having to hire on the spot, promise the moon and often settle for second best



By Natalie Engler

FORTUNE, *then* FAME

High staff turnover continues to haunt IS organizations, putting greater emphasis on retention programs:

13% of IS staff leaves annually

The reasons most often cited for staff losses are:

Salary 70%

Advancement 64%

With today's tight labor market, a moment's hesitation could cost hiring managers months of searching.

Or so discovered Hank Reeves, information systems manager at Fruit of the Loom, Inc. A critical IS candidate was snatched by another company between Reeves' first and second interviews with him.

Reeves may never know whether he'd found the right person for the job, which was to implement a large enterprise resource planning software package for the Bowling Green, Ky.-based manufacturer of underwear and other clothing. But now he understands something else: With qualified applicants choosing from as many as six to nine job offers, IS managers can't afford to blink.

And it looks as though the situation will only get worse. Half the 270 IS managers nationwide who participated in *Computerworld*'s annual hiring survey say they expect (or hope) to grow their staff by more than 10% next year. In New England, the Mountain States and the Mid-Atlantic, one-fourth of the respondents say they plan to increase their IS head count by more than double that amount.

And yet, there's no magic pool of job seekers with their resumes in hand. One-third of the job requisitions opened last year never got filled, the hiring managers report.

To compensate, some hiring managers, such as Brian Callahan, are becoming more pragmatic. He no longer holds out for candidates with years of experience or a specific skill set. Now the chief information officer of Taco Cabana, Inc. says he look for traits such as flexibility and aptitude.

Callahan says he hopes to increase his IS staff by 10% to 20% in the new year. But he concedes that "nowadays, you end up taking a chance on people because you don't find the perfectly qualified candidate."

That isn't to imply that the need for people experienced with Java, Windows NT and Oracle has gone away. It's just that hiring managers are beginning to take a "great deal of latitude in their hiring needs," says Leo Louden, principal consultant at Winter, Wyman & Co., a recruitment firm in Waltham, Mass. In other words, "if they want four things, they'll take someone with two."

Desperate measures, page 74

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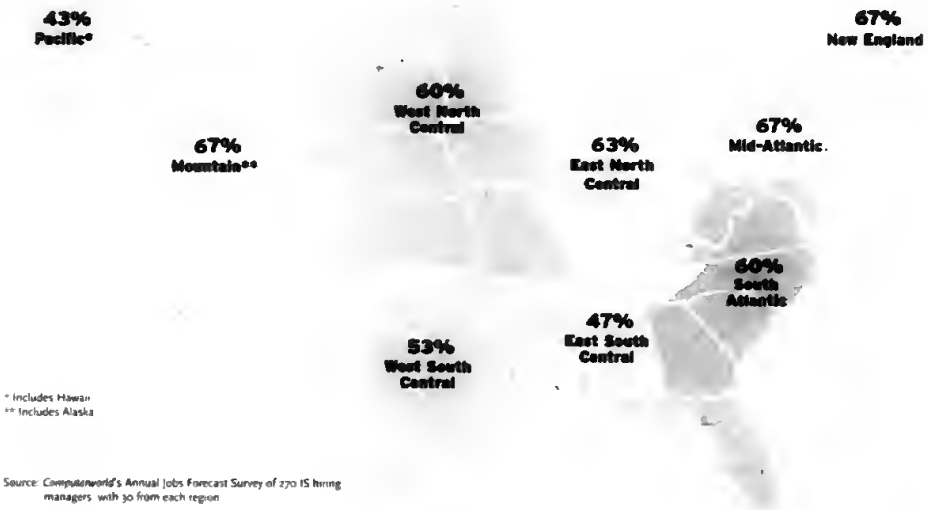
DESPERATE

CONTINUED FROM PAGE 72

THE BEST JOB MARKETS

The number of hiring managers expecting to increase their IS staffs in the coming year has risen by as much as 50% in some regions. Here are the percentages of companies expecting to increase IS hiring in 1998:



* Includes Hawaii
** Includes Alaska

Source: *Computerworld*'s Annual Jobs Forecast Survey of 270 IS hiring managers, with 30 from each region

NETWORKING: ON EVERYONE'S MENU

Networking will be the No. 1 IS growth area in 1998. IS managers say their hiring projections for top skills will include:

Hiring for TCP/IP 40%

Hiring for Ethernet 27%

Hiring network managers 26%

Hiring for Novell NetWare 25%

That's mostly very good news for IS job seekers, whether they want to work on the corporate side, in contracting or for vendor companies. The situation makes it easier to hold out for a truly desirable position.

Jason Dubois, a former technical support specialist at Microsoft Corp., turned down six PC tech-support jobs because he wanted to work on a corporate network. Being picky paid off, and he landed a computer analyst job at Taco Cabana. And in choosing his new area, the 26-year-old from Dallas showed a great deal of foresight.

Networking is the No. 1 growth area in every industry nationwide, according to a recent survey of CIOs by RHI Consulting, Inc., a division of Robert Half International, Inc. in New York. And according to the *Computerworld* hiring survey, networking is also the most difficult skill to find.

In Dubois' region alone, more than 46% of the hiring managers say they plan to hire people who know TCP/IP; 30% need those with Ethernet experience; 27% will bring in Novell NetWare experts; and 13% want network managers.

But for Dubois, networking was more than a hot new skill. It was the road to job satisfaction. At Microsoft, he says, "I was one of 900 people. I had little significance in the scheme of things." At Taco Cabana, he's on a team of 10 that handles all IS-related activities for the San Antonio headquarters and the more than 120 Mexican patio cafes scattered primarily throughout Texas.

"I travel to all the restaurants all the time. I know the managers. I know the employees," Dubois says. "I can give input on a small level as well as recommend ideas to the people in my department . . . At Taco Cabana, I can be heard."

OTHER HOT SKILLS

For IS job seekers such as Dubois, the supply-and-demand gap could offer a means for getting involved in a new technology or project area. After networking, Internet/intranet development is the fastest area of expansion.

As companies such as Genstar Container Corp. in San Francisco move beyond World Wide Web sites and develop corporate intranets and extranets, you can expect to see a strong demand for IS professionals skilled in Hypertext Markup Language (HTML) and Java programming, Web server administration, and most of all, Internet development tools.

Relational database skills also top the most-wanted lists. Companies are increasingly willing to hire and train individuals who have at least basic relational database management system skills. And hiring managers go gaga over candidates experienced in Oracle development and administration.

Rex Carter, vice president and CIO at Carlson Companies, Inc. in Minneapolis, says he expects to hire 35 IS professionals next year. They will work with existing staff and consultants on an enterprisewide systems installation based on Oracle Financials. The challenge is to create a unified financial view of Carlson's more than 100 corporations worldwide in the hospitality, travel and marketing/sales-incentive industries. He needs people who understand financial best practices, Oracle applications, Unix and client/server technologies.

Carter was joined by 36% of IS hiring managers who told *Computerworld* they plan to hire people with Unix skills, and 31% who hope to increase their staff with Oracle professionals. But the latter task won't be easy because 16% also say Oracle is among the most difficult skills to find.

By far, the loudest cry is for people who know Microsoft's Windows NT. Almost half of the IS managers nationwide say they also hoped to hire people with this skill. Windows NT Server came in a close second, at 43%.

That surge in demand surprises at least one person: Jim Crowe, the new CIO of Constitution Reinsur-

THE TOP IS JOBS FOR 1998

Rankings of job titles that IS hiring managers say will be most in-demand, by region

Note: Responses weren't limited to these job titles, but the same 10 topped every region, in different order

Pacific	Mountain	West North Central	West South Central	East North Central	East South Central	South Atlantic	Mid-Atlantic	New England
1. Senior systems programmer	1. PC technical support specialist	1. Senior programmer/analyst	1. PC technical support specialist	1. PC technical support specialist	1. PC technical support specialist	1. Programmer/analyst	1. PC technical support specialist	1. PC technical support specialist
2. PC technical support specialist	2. Network administrator/analyst	2. Senior systems programmer	2. Network administrator/analyst	2. Senior programmer/analyst	2. Network administrator/analyst	2. Senior programmer/analyst	2. Network administrator/analyst	2. Senior programmer/analyst
3. Network administrator/analyst	3. Senior systems programmer	3. Programmer/analyst	3. Programmer/analyst	3. Programmer/analyst	3. Programmer/analyst	3. Senior systems programmer	3. Senior systems programmer	3. Webmaster/Web designer
4. Systems project manager	4. Senior programmer/analyst	4. PC technical support specialist	4. Senior programmer/analyst	4. Network administrator/analyst	4. Senior programmer/analyst	4. Network administrator/analyst	4. Programmer/analyst	4. Network administrator/analyst
5. Senior programmer/analyst	5. Webmaster/Web designer	5. Systems project manager	5. Systems project manager	5. Senior systems programmer	5. Technical support manager	5. Systems project manager	5. Senior programmer/analyst	5. Senior systems programmer
6. Webmaster/Web designer	6. Programmer/analyst	6. Network administrator/analyst	7. Webmaster/Web designer	6. Systems project manager	6. Senior systems programmer	6. Webmaster/Web designer	6. Webmaster/Web designer	6. Programmer/analyst
7. Technical support manager	7. Systems project manager	7. Webmaster/Web designer	7. Senior systems programmer	7. Webmaster/Web designer	7. Systems project manager	7. PC technical support specialist	7. Systems project manager	7. Systems project manager
8. Programmer/analyst	8. Technical support manager	8. Technical support manager	8. LAN manager	8. Technical support manager	8. LAN manager	8. Manager of Internet/intranet technology	8. Technical support manager	8. LAN manager
9. Manager of Internet/intranet technology	9. LAN manager	9. LAN manager	9. Technical support manager	9. LAN manager	9. Webmaster/Web designer	9. Technical support manager	9. LAN manager	9. Manager of Internet/intranet technology
10. LAN manager	10. Manager of Internet/intranet technology	10. Manager of Internet/intranet technology	10. Manager of Internet/intranet technology	10. Manager of Internet/intranet technology	10. Manager of Internet/intranet technology	10. LAN manager	10. Manager of Internet/intranet technology	10. Technical support manager

Source: Computerworld's Annual Jobs Forecast Survey of 270 IS hiring managers, with 30 from each region

THE KILLER SKILLS FOR '98

The technology skills IS managers most want but have the hardest time finding.

Networking 18%

Oracle 16%

C and C++ 12%

Windows NT 11%

Cobol 10%

ance Corp., a New York-based provider of property and casualty reinsurance.

"My background is mostly Unix," says the financial services and defense industry veteran. "When I interviewed in July for this job, they described the environment and said it was going to be NT. I thought they must not be serious about some of these models they plan to run on their server applications."

But they were. In 1998, Crowe expects to hire more people with experience configuring both NT Server and NT Workstations in a networked environment.

NANDS-ON HELP

Good top dogs will always be in demand, and 1998 promises to be no exception. John Davis, president of John J. Davis & Associates, an IS executive search firm in New York, says seven out of 10 positions for which he now recruits are newly created.

But once you get below the CIO level, the demand for nonmanagers seems to be on the rise. Well over a third of IS managers surveyed by *Computerworld* said they plan to hire administrators, programmers and analysts, but only a fifth will bring in computer operations managers, and 13% plan to hire managers of Internet/intranet technology.

IS organizations are flattening, and teamwork is growing. Consequently, hiring managers such as Carter say, "we need fewer supervisory skills and more doers reporting to fewer managers." At Carlson a couple of years ago, you could find approximately one manager for every eight nonmanagers in IS. Today that ratio has gone to 1-to-12 or 1-to-14.

Coupled with rampant salary inflation, it looks as if the future may bring new kinds of career paths and alternative means of advancement.

A DOUBLE BIND

This gilded opportunity for job seekers contains a darker underbelly. After all, the pressure to hire quickly eliminates some of the interview process' quality control. The responsibility to find a good fit, it seems, will fall more squarely on the shoulders of job seekers. Those who don't resist the temptation to oversell could find themselves like one former employee of Genstar Container.

The developer was hired for a major database-driven extranet project undertaken by the subsidiary of GE Capital Service Co. But the candidate lacked the requisite database development skills. Due to that oversight, the new hire could handle the HTML portion of the project, but ultimately ended up in "way over his head," says Jonathan Fornaci, the CIO who hired the developer.

Unable to keep up with the training provided, the developer was moved to a maintenance role. He left the company shortly thereafter.

As Fornaci learned, "by hiring less qualified people, [you risk finding out] they can't stretch themselves to learn that quickly. And instead of adding value, they cost the company money."

DUE DILIGENCE

To be sure, hiring managers must act fast, but not so fast that they end up in a tailspin. Often the solution to this quandary involves spending huge sums of money: on recruiting, on salaries and on retention.

Nationwide, almost six out of 10 hiring managers plan to spend more money on recruiting next year. Almost seven out of 10 are increasing starting salaries. And according to *Computerworld*'s Annual Salary Survey, the average IS salary increase is 9% — more than twice the national average for other professions.

That's part of Callahan's strategy at Taco Cabana. For the first time in 15 years, he says, "I'm continually having discussions with payroll

Desperate measures, page 76

CONTINUED FROM PAGE 75

about raising salary ranges." He says he also expects to increase his recruiting budget by at least 50%.

And IS managers aren't alone in feeling the pinch. Ruth Dodge, resource manager at IDX Systems Corp., a Burlington, Vt.-based company that provides information technology to the health care industry, says to order to increase her staff by 25%, she will have to triple her recruiting budget in 1998.

A PAINFUL PREDICAMENT

But wage inflation and higher recruiting budgets are only half the picture. Companies are facing delayed projects, increased workload on existing IS staff, increased use of temporary or contract personnel and an overall mean time of three months to fill an open position.

At Fruit of the Loom, some people are finding they "can't deliver projects on the same time frames," Reeves says. And when business users ask for tactical projects, such as older system enhancements, increasingly the answer is "no."

The IS labor shortage has forced Carter to increase his use of contract labor "dramatically." It's an expensive Band-Aid for the multinational conglomerate because agencies are raising their contract fees by as much as 2% per month.

WATCH YOUR STEP

What does all this mean as we head into 1998? For job seekers, the message is to do your homework. Know your skills and research prospective employers. In 86% of the companies surveyed, staff members are shouldering the burden of the growing labor shortage. Is that what the future holds for you?

Also, be sure to stretch, but don't pull a hamstring.

For hiring managers, the coming year's hiring dilemma may be one of the most difficult and expensive ever. The message is: Don't underestimate the problem. It may affect your ability to compete. Don't neglect your due diligence. And whatever you do, don't blink. □

Engler is a freelance writer in Arlington, Mass.

THE TOP IS SKILLS FOR 1998

Rankings of technology skills that IS hiring managers say will be most in-demand, by region

Note: Responses were limited to these job titles, but the same 10 topped every region, in different order

Pacific	Mountain	West North Central	West South Central	East North Central	East South Central	South Atlantic	Mid-Atlantic	New England
1. Help desk	1. TCP/IP	1. Windows NT	1. Windows NT	1. Microsoft NT Server	1. Unix	1. Internet development tools	1. Windows NT	1. Windows NT
2. Microsoft NT Server	2. Internet development tools	2. Internet development tools	2. Windows 95	2. Windows NT	2. Windows NT	2. HTML	2. Microsoft NT Server	2. Microsoft NT Server
3. Windows NT	3. Java	3. MS Visual Basic	3. Microsoft NT Server	3. Windows 95	3. Internet development tools	3. Windows NT	3. Oracle	3. Internet development tools
4. Routing	4. Windows NT	4. TCP/IP	4. Internet development tools	4. Internet development tools	4. HTML	4. Web server administration	4. Windows 95	4. Windows 95
5. TCP/IP	5. HTML	5. C++	5. TCP/IP	5. TCP/IP	5. Oracle	5. Microsoft NT Server	5. Internet development tools	5. TCP/IP
6. Novell NetWare	6. Unix	6. Microsoft NT Server	6. HTML	6. Help desk	6. Data warehousing/modeling	6. Java	6. TCP/IP	6. Java
7. Internet development tools	7. Oracle	7. Windows 95	7. Help desk	7. Unix	7. Microsoft NT Server	7. Unix	7. Unix	7. Web server administration
8. Cobol	8. Microsoft NT Server	8. Help desk	8. Java	8. Network management	8. Java	8. Oracle	8. TCP/IP	8. MS Visual Basic
9. Unix	9. Help desk	9. Data warehousing/modeling	9. Microsoft Exchange	9. Year 2000 conversion	9. Microsoft SQL Server	9. Data warehousing/modeling	9. HTML	9. Ethernet
10. Oracle	10. Routing	10. C	10. Systems management	10. HTML	10. Ethernet	10. Microsoft Exchange	10. Oracle Developer 2000	10. HTML

Source: Computerworld's Annual Jobs Forecast Survey of 220 IS hiring managers, with 30 from each region

RETENTION DEFICIT DISORDERS

Most methods used to combat IS turnover are the opposite of what IS professionals left to find

It's a sad state of affairs when more than half the IS managers nationwide worry about good employees being lured away. And yet, strategies for retaining workers don't always match the reasons they leave.

The top method to combat IS staff turnover is training. It's used by 39% of the respondents to *Computerworld*'s hiring survey. But only 27% of IS professionals who leave for other companies do so to receive more training. Turns out people are far more mercenary than that.

A whopping 70% say they left for more money, coupled with 64% who also left for career advancement. Despite that, only 27% of IS managers say they are raising salaries to keep people. But perhaps the biggest gap existed between the 38% of IS professionals who left because of their corporate culture and the measly 4% of managers who plan to improve the work environment.

Fortunately, not everyone is blind to the situation. Here are some examples of strategies that IS managers find to be successful in maintaining a low turnover rate:

- Fruit of the Loom: Two years ago, the company opened an office in Nashville. "We created a separate data center for those who prefer living" in a city larger than the Bowling Green, Ky., headquarters, says IS manager Hank Reeves. It makes for some tricky management maneuvers, but as far as retention is concerned, the strategy "worked well," he says.

- Taco Cabana. The company just initiated an options program in which the amount of stock an employee owns increases every year for five years. The idea, CIO Brian Callahan says, is to "give people a piece of the company and help them not only make money but stay in it for the long haul."

In addition, Callahan says, "I'm much more flexible now." For example, he encourages people to take their family on business trips and schedule a vacation at the end. "There's a lot more mixing of work with pleasure than in the past," he says. "I think that adds to the loyalty of the team."

- Carlson Companies: Rex Carter, vice president and CIO, hopes to add 200 people to his 1,000-member IS department in 1998. To encourage employee referrals, he instituted a referral reward and an ongoing bonus program that can add up to $6,000 if a referred employee stays with the company for four years.

The company is also improving IS compensation and benefits packages by introducing project-related bonuses and incentives, career development activities and work-life programs, such as flex-time and day care.

The efforts seem to be making a big difference, Carter says. "While our attrition has gone up, we still are well below what we've seen in the community and nationwide" — a turnover rate of 20% to 35%.

— Natalie Engler

THIS STAFFING GAME STINKS!

It's an awesome ride for job-seeking IS professionals and one long, lousy journey for those who are hiring them. IS managers say the increased time to find qualified staffers is taking the following toll:

Heaping more work on current staff 86%

Delaying IT projects 80%

Increasing salaries for new hires 66%

Being forced to hire contractors 63%

Spending more on recruiting 58%

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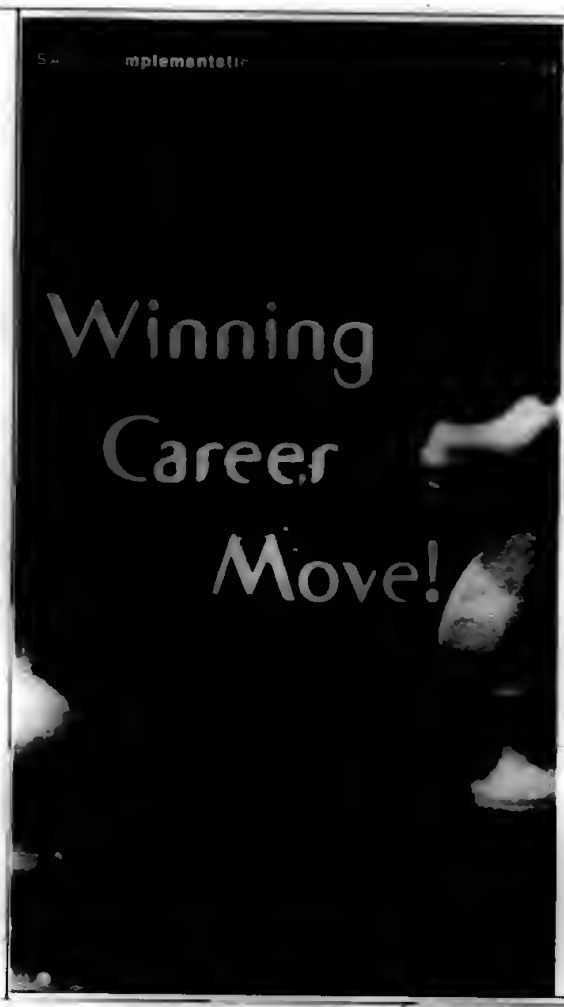

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- At least 5 years of Information Systems experience and 2 years of Project Management/Team Leader experience
- Knowledge of IDMS, COBOL, JCL and VSAM technologies and applications
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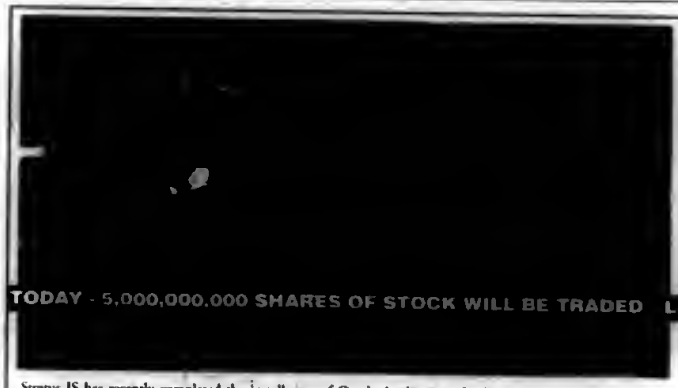

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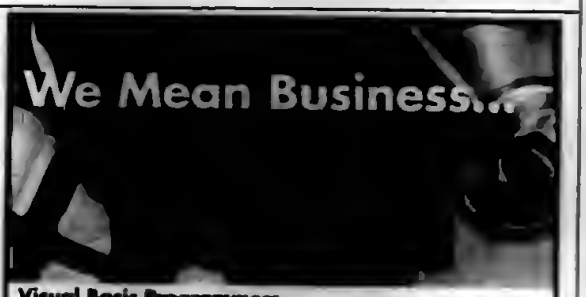

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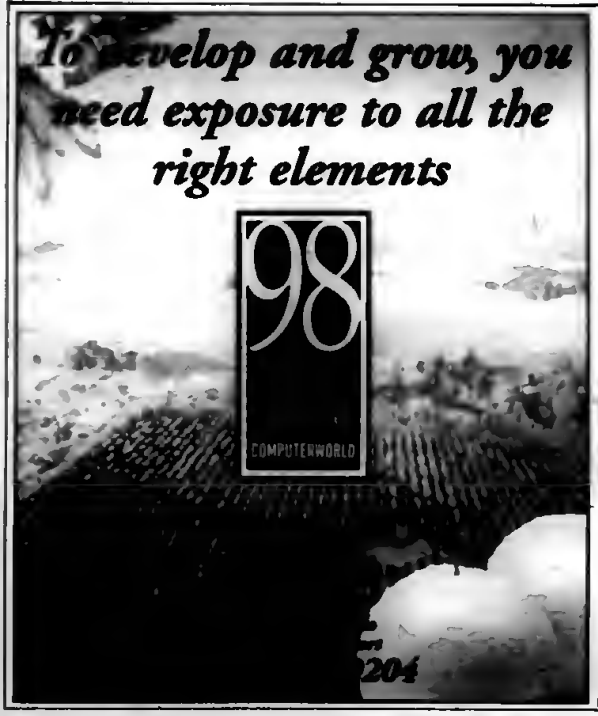

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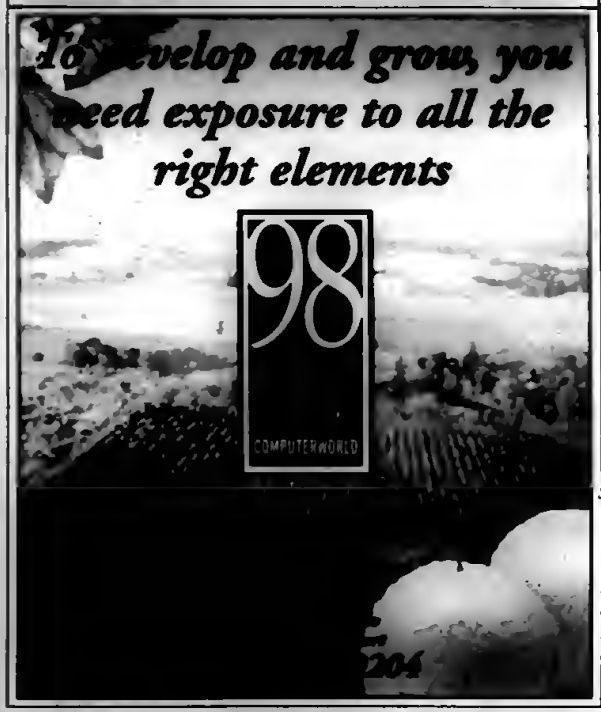

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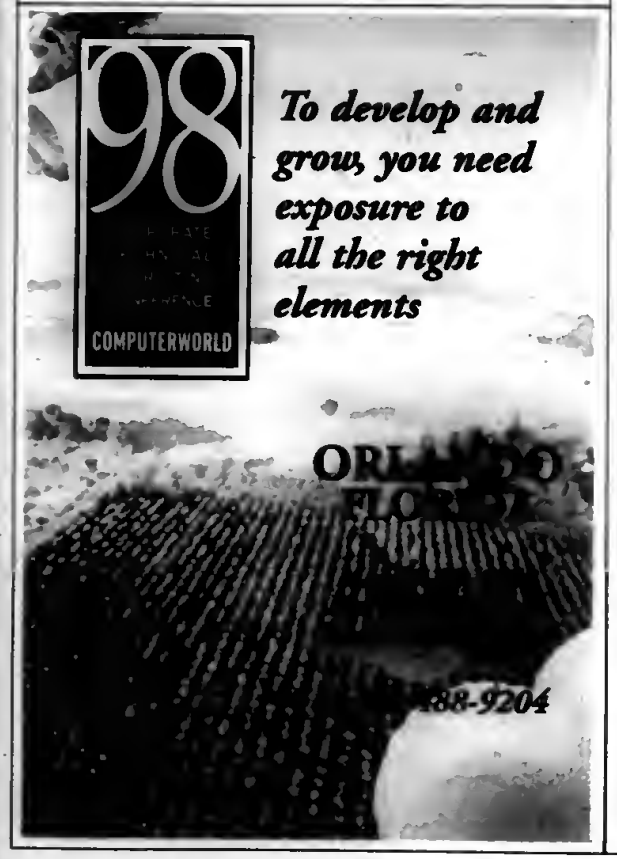

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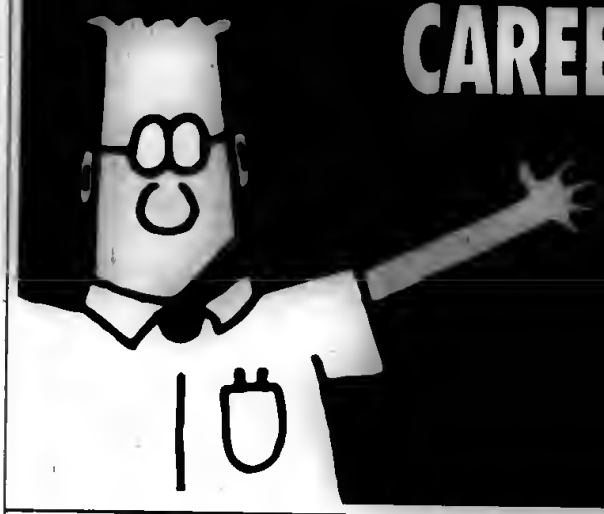

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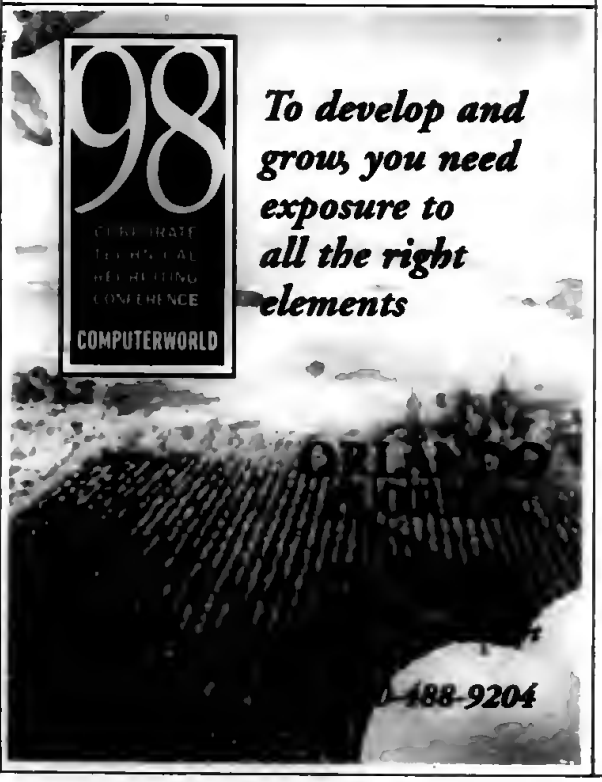

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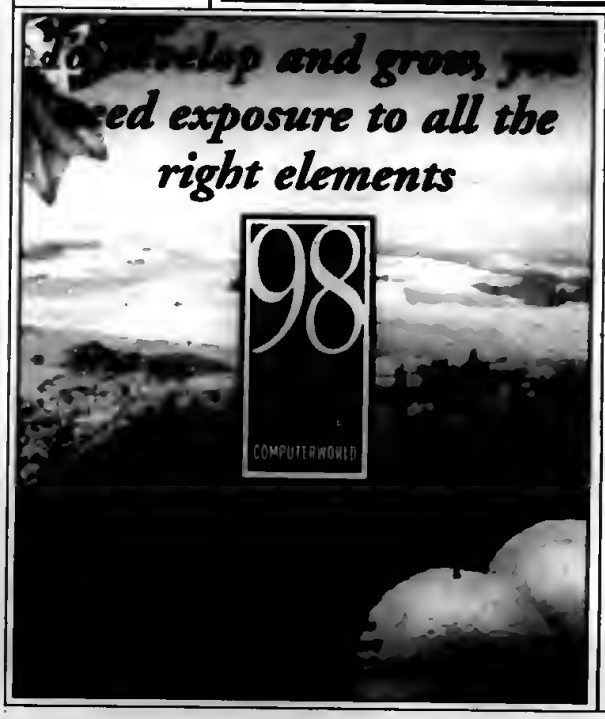

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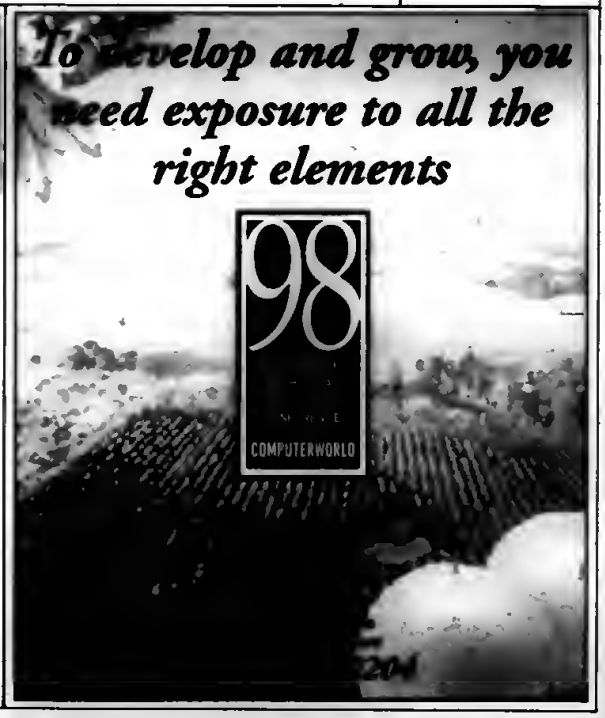

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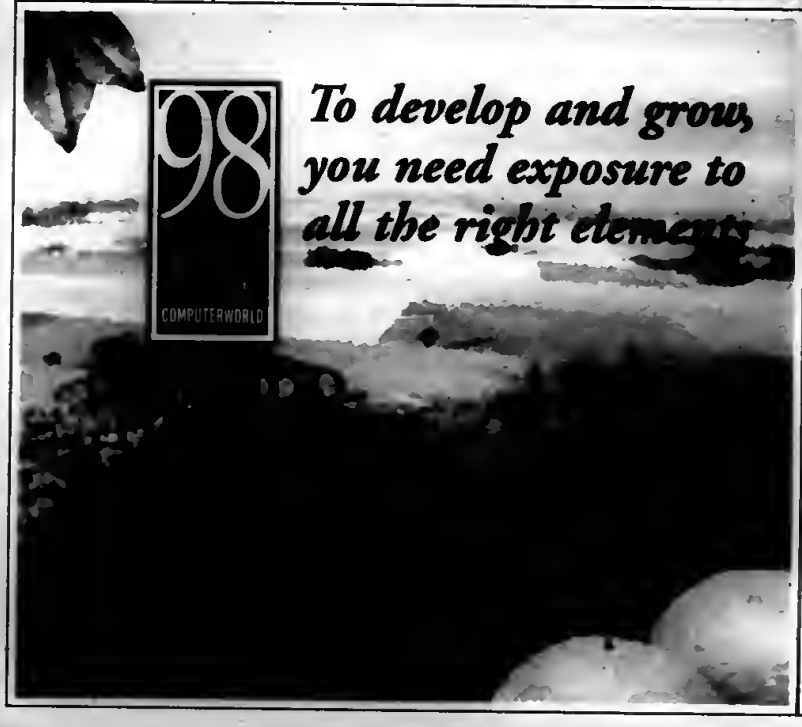

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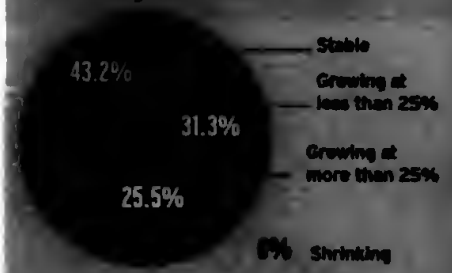

Projected Regional Growth Analysis

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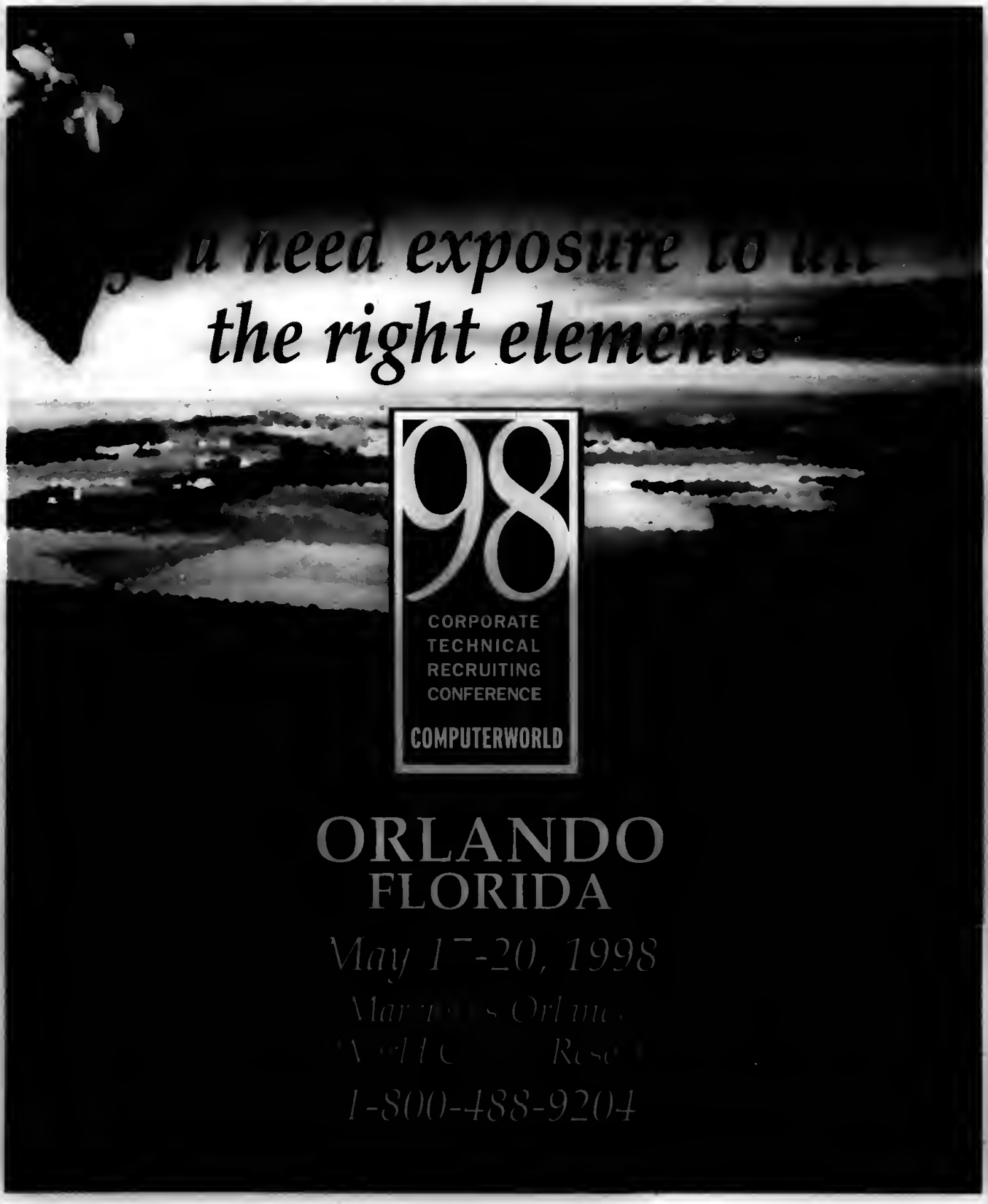
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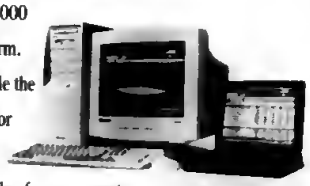

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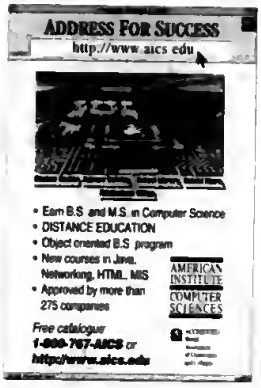

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ADVERTISERS INDEX

Acer America 48
http://www.acer.com

Allegiant Legacy 60

Arbor Software 17
http://www.arbor.com

BMC Software 67, 69, 71
http://www.bmc.com

Cap Gemini 68*
http://www.capgemini.com

ComNet 50

Compaq Computer Corp. 26-27
http://www.compaq.com

Computer Associates 5
http://www.cai.com

Compuware 18-19
http://www.compuware.com

Deloitte & Touche Consulting Group (ICS) 55
http://www.deloitte-ics.com

Digital Equipment Corp. 12-13
http://www.digital.com

Fort 11
http://www.forte.com

Information Builders 20
http://www.ibi.com

Kingston Technology C4
http://www.kingston.com

Managing Automation 51
http://www.mosg.com

Meckler Media 22

Micro Focus 9
http://www.microfocus.com
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Micron C3
http://www.micron.com

Oracle Corp. 7, 52
http://www.oracle.com

SAS Institute 44-45
http://www.sas.com

Sun Microsystems . . 15, 34-35, 56-57
http://www.sun.com

Sybase 37
http://www.sybase.com

Synon 66*
http://www.ssax.com

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http://www.bmc.com

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3Com Corp. 36
A-dec, Inc. 1
A.C. Nielsen Corp. 8
ABB Asea Brown Boveri Ltd. 10
Aberdeen Group, Inc. 6,41
Absolute Software Corp. 14
Adaptec, Inc. 41
ADT Securities Services, Inc. 14
Adtran, Inc. 59
Advanced Digital Information Corp. 71
Advanced Manufacturing Research, Inc. 61
AlliedSignal Corp. 49
America Online, Inc. 1
American Antiquarian Society 28
American Express Corp. 59
American Management Systems, Inc. 29
Andyne Computing Ltd. 8
Anheuser-Busch, Inc. 61
Apple Computer, Inc. 8,65
Artecon, Inc. 8
Association of Retail Travel Agents 51
AT&T Corp. 55,109
Avery Dennison Office Products 41
Ascent Technologies, Inc. 59
Balboa Travel, Inc. 49
Bankers Trust New York Corp. 28
BC Telecom, Inc. 4
BDM International 65
Bell Atlantic Corp. 31
Bell Canada, Inc. 61
Blessing/White, Inc. 51
Bloomberg News Service 59
Bluestone Software, Inc. 65
Boise Cascade Office Products Co. 36,42
Brainstormers, Inc. 41
British Telecommunications PLC 109
BT Ventures 28
Burlington Coat Factory Warehouse Co. 65
Canon USA, Inc. 53
Cap Gemini America 30
Carlson Cos. 72
CDnow 53
Central Illinois Light Co. 17
Charles Schwab & Co. 3,4,61
Chase Manhattan Bank Corp. 3,61
Chevron Corp. 8
Chilton Co. 14
Chrysler Corp. 65
Cigna Corp. 42
Cisco Systems, Inc. 17,33,59
Compaq Computer Corp. 3,4
Computer Associates International, Inc. 3
Computer Network Technology Corp. 14
Computer Sciences Corp. 29
Computer Sentry Software, Inc. 14
Constitution Reinsurance Corp. 72
Crawford Communications Corp. 65
Creative Networks, Inc. 8
Credit Suisse First Boston 51
Data General Corp. 77
Dell Computer Corp. 3,4
Deloitte & Touche Consulting Group 51
Detroit Edison Co. 3,25
Digital Equipment Corp. 51,65
Dow Jones & Co. 51
Dow Jones Interactive Publishing 1,51
Du Pont Co. 65
Duke Power Co. 10
Eddie Bauer 53
Electronic Data Systems Corp. 8,59
EMC Corp. 14
EToys, Inc. 1
Excite, Inc. 1
Federal Express Co. 25
First Chicago NBD Corp. 60
Forrester Research, Inc. 1,8,25,33,63
Frost & Sullivan, Inc. 65
Fruit of the Loom, Inc. 72
Fulcrum Technologies, Inc. 8
Galileo International 14
Garden Escape 53
Gartner Group, Inc. 3,17,36,41
Gateway 2000, Inc. 4
Gats Capital Corp. 61
GE Capital Service Co. 72
General Motors Acceptance Corp. 8
General Signal Networks, Inc. 14
Genstar Container Corp. 72
GeoFax, Inc. 36
Giga Information Group 36,41,43,53
Greater Cleveland PC User Group, Inc. 3
Great Street, Inc. 2
Greyhound Lines, Inc. 6
GTE Corp. 8,59
GTE Internetworking Corp. 59
Harbinger Corp. 8
Hewlett-Packard Co. 3,4, 36,53,59,65
Hitachi PC Corp. 67
Hottinger Baldwin Measurements, Inc. 2
Hughes Aircraft Corp. 51
Hummingbird Communications Ltd. 53
Heppmann Group 60
Hurwitz Group, Inc. 53,61
IBM 3,4,8,14,16,17,36,65,69
ICVerify, Inc. 53
IDX Systems Corp. 72
Informix Software, Inc. 1
Insurance Merchant Bank 28
Intel Corp. 65,109
Intergraph Computer Systems 65
Interlink Computer Sciences, Inc. 17
International Data Corp. 1,3,8, 14,33,36,41,47,65
Internet Security Systems, Inc. 59
Interwave Travel Concepts 51
John J. Davis & Associates 72
Joe Padda Associates 65
Jupiter Communications, Inc. 1,25,53
Knight-Ridder, Inc. 4,53
Konica Business Machines USA, Inc. 59
KPMG Consulting LLP 53
LG&E Energy Corp. 1
Lincoln Beach Software 53
Lotus Development Corp. 8
Marquette University 42
McConnell Consulting, Inc. 59
MCI Communications Corp. 8,36,40, 53,69,109
Merrill Lynch & Co. 9,31
Meta Group, Inc. 6,14,40
Methodist Hospital 49
Micro Tempus, Inc. 16
Microsoft Corp. 1,4,6,8,31, 33,36,51,53,59,65,69,72,109
MicroTech Conversion Systems 65
Mobile Insights, Inc. 33,36
Montana Department of Public Health and Human Services 65
National Football League 53
National Science Foundation 40,58
National Semiconductor Corp. 59
Nationwide Insurance Co. 6
NEC Electronics, Inc. 65
Nano Systems, Inc. 16
Netopia, Inc. 59
Netscape Communications Corp. 4, 6,53,69
NetScout Systems, Inc. 59
New Era of Networks, Inc. 16
New York State Insurance Department 8
Novartis Pharmaceuticals 51
Novell, Inc. 6,31,69
NPD Group, Inc. 1
Nuclear Regulatory Commission 30
Office Depot, Inc. 36,42
Oracle Corp. 1,8,16,41,53,65
Owens Corning 8
Oxford Health Plans, Inc. 8
PC DOCS Group International, Inc. 8
PC Help Services, Inc. 6
Peco Energy Corp. 42
Permanent Hosiery, Inc. 8
PeopleSoft, Inc. 41
Pitney Bowes, Inc. 61
Pratt & Whitney 4
Prometheus Technology Corp. 8
Progressive Insurance Co. 53
ProShop.com 41
QVC 8
Rancho Industries, Inc. 6
Real Rate Survey 29
Red Hook Ale Brewery, Inc. 61
Remedy Corp. 3
RMI Consulting, Inc. 72
RSA Data Security, Inc. 36,42
SAP AG 41,61
SCO, Inc. 65
Seagate Technology, Inc. 69
Secure Computing, Inc. 59
Sequent Computer Systems, Inc. 8
Patricia Seybold Group 61
Shared Services, Inc. 53
Sharpe Electronics Corp. 36
Shop.org 1
Silicon Graphics, Inc. 65
Simon & Schuster, Inc. 53
Skidmore College 1
Smith Barney, Inc. 3
Society for Information Management 30
Software Artistry, Inc. 3,53
Software Technologies Corp. 16
Sony Online Ventures, Inc. 53
Southwestern Bell Corp. 109
Spiegel, Inc. 25
Sprint Corp. 8,59
Storage Dimensions, Inc. 8,14,71
Summit Strategies, Inc. 65
Sun Microsystems, Inc. 8,65
Sybase, Inc. 1,53
Synchrologic, Inc. 53
Systems Administration Networking and Security Institute 8
Teca Cabana, Inc. 72
Technology Business Research, Inc. 65
Technology Management Reports 30
Tedmar & Associates, Inc. 65
Texas Instruments, Inc. 36
The AGI Group 49
The Bean Co. 1,41
The Canadian Imperial Bank of Commerce 30
The Chase Manhattan Bank Corp. 25
The Clipper Group, Inc. 17
The Dow Chemical Co. 49
The Internet Factory, Inc. 25
The London Sunday Times 49
The New York Times Co. 8
The Photo Store LLC 1
The Registry, Inc. 36,42
The Sabre Group 40,53
The Tower Group 3
The Yankee Group 14
Time Warner, Inc. 59
Time, Inc. 59
Tivoli Systems, Inc. 3
Trek-It Solutions 53
Tufts University 53
U.S. Food and Drug Administration 30
U.S. Robotics 36
Unison Software, Inc. 3
Unisys Corp. 40
United Press International 49
United Technologies, Inc. 4
University Corporation for Advanced Internet Development 38,40
University of Chicago 28
US West Communications, Inc. 31,36
Wal-Mart Stores, Inc. 25
Warren H. Sass Associates 59
Watkins Motor Lines, Inc. 14
White Pine Software, Inc. 59
Winter, Wyman & Co. 72
Wojner Productions, Inc. 65
Worcester Art Museum 28
Worcester Foundation for Biomedical Research 28
WorldCom, Inc. 59,109
Xcellenet, Inc. 53
Xerox Corp. 53
Xilinx, Inc. 4
Yahoo, Inc. 1
Young & Rubicam, Inc. 59
Zona Research, Inc. 4,41,53

NEWS

Databases dethroned by bundled applications

CONTINUED FROM PAGE 1

Last spring, A-dec bought an Informix Software Inc. database in a bundle with packaged applications from The Baan Co. The applications were the top priority, and Bearden worked almost exclusively with Baan during the sales process. "We dealt very, very little with Informix directly," he said.

The increased focus on packaged apps is forcing Oracle and its database rivals to rely more on app vendors for sales.

And four months later, A-dec didn't hesitate to switch to Oracle Corp. at the database end after hitting throughput walls with Informix's software, Bearden said.

Skidmore College in Saratoga Springs, N.Y., also was neutral on databases before picking Oracle's financial applications, which support only the vendor's own database.

"We probably would have been satisfied with Sybase or one of the other [database] vendors," said Kenneth Hapeman, director of Skidmore's information technology center. "What really pushed us over the edge was that we liked the Oracle applications."

The increased focus on packaged software is forcing Oracle and its database rivals to rely more on application vendors for sales. "It's a different world for the database vendors," said Carl Olofson, an analyst at International Data Corp. (IDC) in Framingham, Mass.

TOUGH ROAD

And coping hasn't been easy.

Each of the client/server database Big Three — Oracle, Informix and Sybase, Inc. — is having trouble keeping database revenue on an upward path.

The latest evidence: Oracle, in Redwood Shores, Calif., in December reported that database sales grew a measly 3% in its second fiscal quarter [CW, Dec. 15].

Other factors are contributing, most notably the rise of low-cost Windows NT databases. Oracle also blamed some of its sales slowdown on the Asian currency crisis. And Menlo Park, Calif.-based Informix and Sybase, in Emeryville, Calif., are both struggling to recover momentum from ongoing or past losses.

But bundling databases with packaged applications leaves less money on the table for the database vendor, users and analysts said.

For example, Oracle got about $1,000 per user for the Baan-specific database licenses that A-dec bought, Bearden said. That is only about half the price Oracle is trying to charge for some general-purpose database licenses that A-dec now wants to buy, he said.

Likewise, LG&E Energy Corp. got a pricing break by buying an applications/database bundle from Oracle during 1997, said Mike Spurlock, financial systems project manager at the utility in Louisville, Ky.

LG&E didn't have Oracle databases before and was open to using rival products such as Microsoft Corp.'s SQL Server, depending on its packaged software choice, Spurlock said. Oracle's applications sealed the deal for new finance and materials management systems that are due to go live in July.

"The database is still a very important part of the equation, but the functionality of the applications has to come first," Spurlock said. "They're more the strategic winner [for users]." □

DATABASE DOWNER

Oracle:

- **Two straight quarters of single-digit database growth**
- **Earnings below expectations in most recent quarter**

Informix:

- **Three straight quarters of losses in 1997**
- **Earnings and revenue restated back to 1994**

Sybase:

- **Database sales continue to fall after losses in 1996**
- **Still lacks support for key packaged applications**

Holding databases at bay

Major new database releases came from hither and yon in 1997. But users aren't exactly rushing to welcome the software into their data centers.

Oracle cranked up the marketing machine for the Oracle8 database it released last spring; Informix did the same with an object-enabled version of its Dynamic Server software. But analysts said user uptake has been slow, in keeping with the usual patterns of database adoption.

"Practical-minded people are leery of buying a brand-new database," said Carl Olofson, an analyst at IDC. That applies both to new customers and the installed base, which run their businesses on older but proven releases, he added.

For example, LG&E Energy isn't jumping on the Oracle8 train yet. New finance and materials management applications that it plans to start using next summer initially will run on the earlier Oracle7 software, said project manager Mike Spurlock.

LG&E had started development on Oracle7 before the new version came out in late June.

"Sometimes you have to drive a stake in the ground and stabilize your development effort once and for all," Spurlock said. "We were already pretty far down the road [with Oracle7]."

— Craig Stedman

The Web gets down to serious business

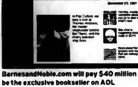
CONTINUED FROM PAGE 1

Calif., which launched its Web site in October with a $3 million America Online deal.

BarnesandNoble.com, for example, will pay $40 million over four years to be the exclusive bookseller on AOL's consumer service. Earlier deals in 1997 involving flower, travel and general online retailers were also in the tens of millions of dollars.

Overall, America Online's revenue from advertising and electronic commerce — though still only 20% of the amount coming in from membership fees — grew almost 125% this past quarter from a year ago. That is much faster than subscriber revenue, which rose about 40%.

Top search engines such as Yahoo, Inc. and Excite, Inc. are also becoming crucial ad buys for many online sites. At Excite, for example, revenue for the third quarter of 1997 was $14.4 million, which exceeded the company's sales for all of 1996.



BarnesandNoble.com will pay $40 million to be the exclusive bookseller on AOL

An estimated 41% of all people on the Web check into Yahoo, making it second in consumer popularity after America Online, according to Pamela Smith, president of NPD Group, Inc.'s online research division in Port Washington, N.Y.

Yet only the top 10 sites offer access to at least 10% of the surfing public, with the rest of the market offering just slivers of viewership.

Not everyone is happy with the emergence of a few major players that collect and funnel consumers around the Web, although most in the industry are reluctant to openly criticize the top sites. "I think it's a very touchy subject," said Robert Smith, president of the newly formed Internet retailing association Shop.org.

One of the few to publicly part ways with America Online recently was Dow Jones Interactive Publishing, which planned to leave the service Dec. 31 because America Online will no longer pay for business news items. Dow Jones is one of the few Web-based news services that successfully charges subscription fees for its site.

Major online advertising, though considered critical by many online retailers, doesn't work for all sites. The Photo Store LLC initially tried generalized banner ads on a search engine but "found the response to be relatively disappointing," said William Howe, head of a marketing firm and general manager of the site.

Ideally, retailers would like to structure deals where they pay for sales generated, not simply advertising "click-throughs" or consumer "eyeballs," Vanderbilt said. "Unfortunately for the merchants, these 'aggregators' wield so much power [they can] demand these up-front deals." But that won't hold true in the long run, she said. Sites are trying to first attract visitors. They will later concentrate more on cementing relationships and closing sales.

And as the Web and surfing habits mature, "it will be harder and potentially more expensive" for newcomers to get established and snare customers online, said Brett Bullington, an executive vice president at Excite. "But I think there will always be opportunities for new sites to do new things that will become hits on their own." □

& Travelocity Web site wins revenue, but profits are still years away, Page 53

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COMMENTARY

Things you won't see in '98

Bill Laberis

Like 1997 and each of the past several years, 1998 will serve as the manifold expression of Bill's Law (this Bill, not the rich one). Bill's Law simply states that nothing in the world of IS happens as quickly as people generally think.

Then there's the corollary to Bill's Law: Vendor hype expands to fill the space — any space whatsoever.

In the true spirit of Bill's Law, here are several things that won't happen in 1998, and why.

• **The forging, at last, of the business/IT link.** This won't happen because it already has happened; it's only a misperception that it hasn't. Want some proof? Do you know of a healthier, more growth-oriented, more profitable group of corporations anywhere than in the U.S.? The U.S. also outspeeds corporations in the rest of the industrial world nearly two to one in IT.

I'm not saying every nickel spent here is a business-driven investment. But clearly, IT spending is linked to the U.S.'s success. The misperception that business and IT aren't linked comes from the failure of CIOs to become part of the business strategy team at many companies.

• **The dissipation of your bandwidth problems.** You can thank the birdbrains in our federal government, in part, for this not happening. They choose to go full bore after a competitive cat like Microsoft but refuse to give the monopolistic Baby Bells some real competition in the local loop. Do you realize how long it has taken the regional Bell operating companies just to get ISDN to its relative availability today — with a transmission rate only twice the speed of conventional modems? But why rush? It's not as if anyone else can compete against the Baby Bells. Thank you, Washington.

But Bill, you say, what about 1996's telecommunications act? The Baby Bells' competitors can get into the local loops only by reselling local lines owned by those Baby Bells or building their own bypass networks. Both alternatives, provided for in the act, have failed to spark enhanced competition except in some major metropolitan areas.

• **The wide deployment of Java and Windows NT for business-critical applications.** By midyear, each of these IT wonder drugs may actually be ready for some heavy lifting in the enterprise. But vendors continually underestimate the inherently conservative and pragmatic nature of you, the IS manager. Vendors also chronically underestimate the human factor in deploying and maintaining new technologies.

I think the next big wave in enterprise computing will be set off in 1999, when Intel's hot Merced chip starts showing up in servers. That chip will give very inexpensive hardware built on de facto standards the juice to give big Unix boxes and mainframes a run for their lives.

• **The taming of the year 2000 problem by year's end.** That will partially come true. The problem will be well in the hands of some of the lowest life forms on Earth: tort lawyers, whose motto will soon be, "Sure beats chasing ambulances." These bloodsuckers will be aided and abetted by appointed liberal judges across this great land, who operate on the assumptions that corporations are evil and that bigness means badness. In addition, too many companies started far too late to resolve their year 2000 problem and will begin scrambling for help at the margins, where the help is, well, marginal. □

Editor in chief at Computerworld *from 1986 to 1996, Laberis is now president of Bill Laberis Associates, a consulting and publishing company in Holliston, Mass. His Internet address is bill@laberis.com.*

1998: The race to get connected

David Moschella

In preparing for the future, knowing what will happen is often less important than understanding how people will think. For that reason, I believe the main story of 1998 will be an unprecedented worldwide consensus regarding the role of technology and the basics of global business management.

Just as the collapse of communism had the effect of narrowing serious political thought — we're all capitalists now — so will the boom in technology and the downturn in Asia help build a new economic consensus centered on deregulated markets, open financial disclosure, market discipline, innovation, quality, consumer responsiveness and leveraging our increasingly networked world.

During the past two decades, there has been a fundamental schism in worldwide business thinking. At times, it seemed that the East and West had diametrically opposed views on just about every issue that mattered: exports, consumption, savings, investment, worker loyalty, government involvement, financial reporting requirements and, unmistakably, use of technology.

But it's clear that the so-called Asian way has been directly responsible for much of the region's nightmare. In the 1980s, U.S. companies were forced to learn about worker involvement, quality and supplier cooperation from their Japanese rivals; so will Asia look to the West to help sort out the worst of its outdated practices. The net effect is that, as with politics, the range of business debate will narrow, to those slightly to the left or right of center.

Although today's Asian discussion focuses mostly on financial issues, the global technology gap soon will be added to the mix. Many in the region are just beginning to accept the fact that there's a big difference between selling a lot of technology components all around the world and effectively using information systems at home. Ironically, success in one has had little to do with the other.

Indeed, when it comes to using technology, with a few exceptions, Asia is far behind, and the gap is widening. It's no coincidence that most of the problems are in Japan, Korea, Thailand and Indonesia, with a jittery China quite possibly next.

Unless rapid technological deployment occurs, the restructuring, flattening and revitalization of Asian finance, telecommunications and other overpadded segments likely will prove elusive. During 1998, this will become the conventional wisdom.

This new thinking will be a watershed for the technology industry. Once advanced technology use becomes globally recognized as an essential societal goal, the race to build a high-performance network economy will have truly begun. During the next 12 months, major economies and corporations all around the world will rededicate themselves to reaching near-universal connectivity to a high-bandwidth communication infrastructure, with a sense of urgency reminiscent of the U.S. response to *Sputnik*.

Although lagging technology use is just one of the many causes of today's Asian contagion, it will rank high on any list of proposed remedies. In our increasingly competitive world economy, there will be few other paths forward. As this pervasive consensus takes hold in New York, London and Tokyo, the pace of our industry's advancement can only accelerate. We're all technologists now. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is david_moschella@cw.com.*

NEWS

The Back Page

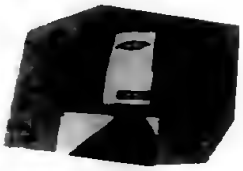
altcw

Dispatches & images from the fringes of the electronic frontier

OWN A PIECE OF HISTORY

California entrepreneur Tony Cole is hawking chunks of a Cray-1 supercomputer as mementos (*www.memorybilla.com*). He bought the first-generation supercomputer from a federal lab for $10,000 and sells Cray-1 memory boards for $150 apiece — with a certificate of authenticity.

Digital archives



20 YEARS AGO
(January 1978)

- The Carter administration halts development of an $850 million IRS computer system because of fears it would threaten privacy rights of U.S. citizens.
- Headline: Porn finding its way onto children's home computer screens [via online bulletin boards]

- Apple demonstrates prototype Apple II disk drive.

10 YEARS AGO
(January 1988)

- Russian computer game Tetris debuts in the U.S.
- Microsoft releases Windows 2.03, for the first time using Macintosh-like icons and overlapping windows.
- Digital and Apple announce an alliance to have Macintoshes act as desktop gateways to Digital's systems.
- AT&T and Sun Microsystems announce an alliance to build Unix workstations.

Aerogels could speed computers

Researchers at Rensselaer Polytechnic Institute in Troy, N.Y., are studying "aerogels," substances so porous they are more air than solid. Used as insulators on computer chips, they could more than double computing speeds in five years. Good insulators let designers place electron paths close together with no speed loss.

But what's the duck got to do with it?

Intraware employee Josh Fradenburg was recently seen dressed as a duck and handing out bars of soap to passersby. Granted, this was in San Francisco, but why? He was promoting the Come Clean campaign, which advises software users to "come clean" and pay the license fees for their downloaded and unlicensed software. It is sponsored by Intraware and Netscape.

BUSINESS WIRE

Inside Lines

Old laptops never die, they just sit in the closet

At least James Campbell, laptop help desk adviser at the California Compensation Insurance Fund in San Francisco, has a sense of humor about the burden of recycling dozens of the company's antiquated laptops. "We've had a contest going on for months among the auditors, who want to get them out of their closets," Campbell says. "We don't know what the hell to do with them."

Year 2000 glitch hits home

The first wave of year 2000 glitches is hitting the retail world, and everybody involved is blaming someone else. Though the big date is still two years away, credit-card companies have began mailing cards with a 01/00 expiration date, and some systems are summarily rejecting them as expired. We know someone whose Discover card was rejected at a Getty gas station. Of course, the gas station owner blamed Discover, and Discover's customer service representatives blamed the retailer. Regardless of whom is to blame, the fix is easy — for now. Discover will send cardholders with the 01/00 expiration date new cards with a 12/99 date.

It isn't getting old, it's getting better

Gartner Group tried to clean some vintage analysis out of its vaults in an end-of-the-year fire sale. Gartner offered holiday shoppers discounts of up to 82% on 18 "executive reports," some from 1997 but others dating all the way back to August 1995. And volume buyers who coughed up more than $1,000 got to take another 10% off their bill. A Gartner marketing fax assured suspicious minds who might wonder about the usefulness of old reports that they provide "a look into the future, not the past." Alas, the sale ended as 1997 drew to a close.

Sorry, you've been realigned

Novell, in Provo, Utah, quietly pink-slipped about 30 workers — mainly in marketing — in the past two weeks. But the company says it wasn't a layoff. "It was a realignment of marketing resources," said Novell corporate spokesman Raymond Nasr.

HP to extend Fibre Channel

Hewlett-Packard plans to unveil a Fibre Channel networking hub that will let users separate disk arrays and other devices by up to three kilometers. The Palo Alto, Calif., company has been shipping Fibre Channel disk systems that get over the performance, distance and scalability limitations of the SCSI standard used today.

Lotus has upsizing on the brain

Sources close to Lotus Development Corp. said the company will play up two major themes — scalability and reduced cost of ownership — at its Lotusphere '98 show slated to be held in Orlando in January. The company will highlight how companies can improve scalability and keep overall costs down by running its Domino server on the midrange AS/400 or S/390 mainframe platform in conjunction with departmental Domino servers.

Count us in

The two top vendors of desktop query tools are getting their Web acts together. Business Objects in late December shipped server-based software that lets users read reports and query data warehouses from their browsers. Meanwhile, rival Cognos in January plans to tie a Web-based query tool to the metadata catalog used by its Impromptu desktop software. Cognos also is due to add support for Unix servers and Java to a Web-based version of its high-end PowerPlay analysis software that was released last June.

So how has embattled Microsoft been responding to all the heat from the government and the court? Its corporate information Web page contains a section called "Refuting the myths." If you have any myths, realities or plain old news tips, send them to news editor Patricia Keefe at (508) 820-8183 or patricia_keefe@cw.com.

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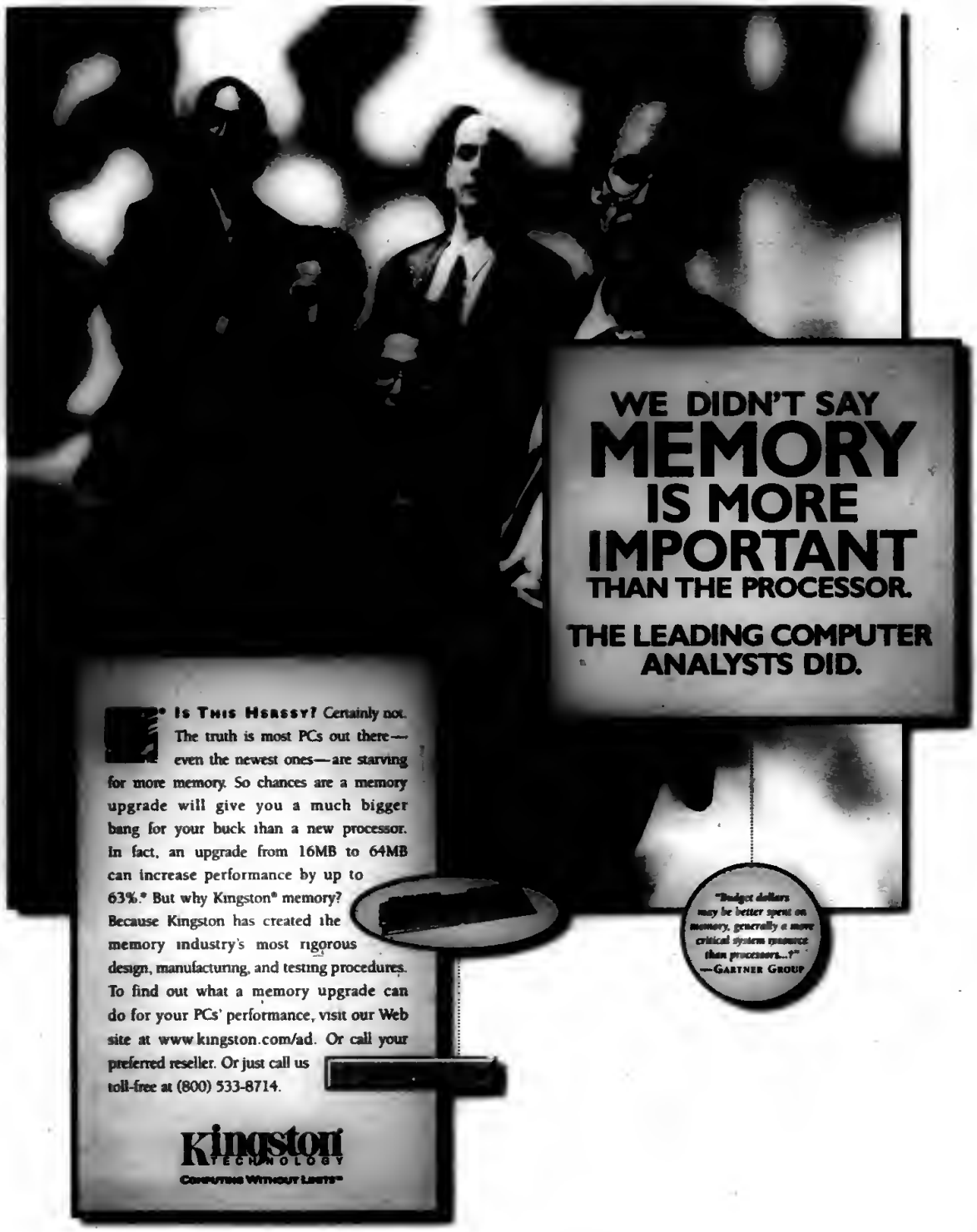
Thinking Out Of The Box



*Gartner Group Continuous Services, *Research Note*, 7/18/96 *Upgrade from 16MB to 64MB on Pentium® Pro 200 MHz. Testing was conducted by an independent service for Samsung Semiconductor Inc. Kingston Technology Company, 17600 Newhope Street, Fountain Valley, CA 92708, USA. (714) 435-2600. Fax (714) 435-2699. © 1997 Kingston Technology Company. All rights reserved. Computing Without Limits is a trademark of Kingston Technology Company. All other trademarks and registered trademarks are the property of their respective owners.